DOCUMENT RESUME

ED 339 895 CE 059 851

AUTHOR Martin, Robert A.; And Others
TITLE Model Course of Study for Agricultural Programs in Iowa. Preparing for the Future.
INSTITUTION Iowa State Univ. of Science and Technology, Ames. Dept. of Agricultural Education.
SPONS AGENCY Iowa State Dept. of Education, Des Moines.
PUB DATE 87
NOTE 108p.
PUB TYPE Guides - Classroom Use - Teaching Guides (For Teacher) (052)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Agribusiness; *Agricultural Education; Agricultural Machinery; *Agricultural Production; Biology; Conservation (Environment); Daily Living Skills; Demonstration Programs; Farm Management; Field Crops; Forestry; High Schools; *Horticulture; Landscaping; Occupational Safety and Health; Plant Propagation; State Curriculum Guides; Turf Management; *Vocational Education
IDENTIFIERS *Iowa

ABSTRACT

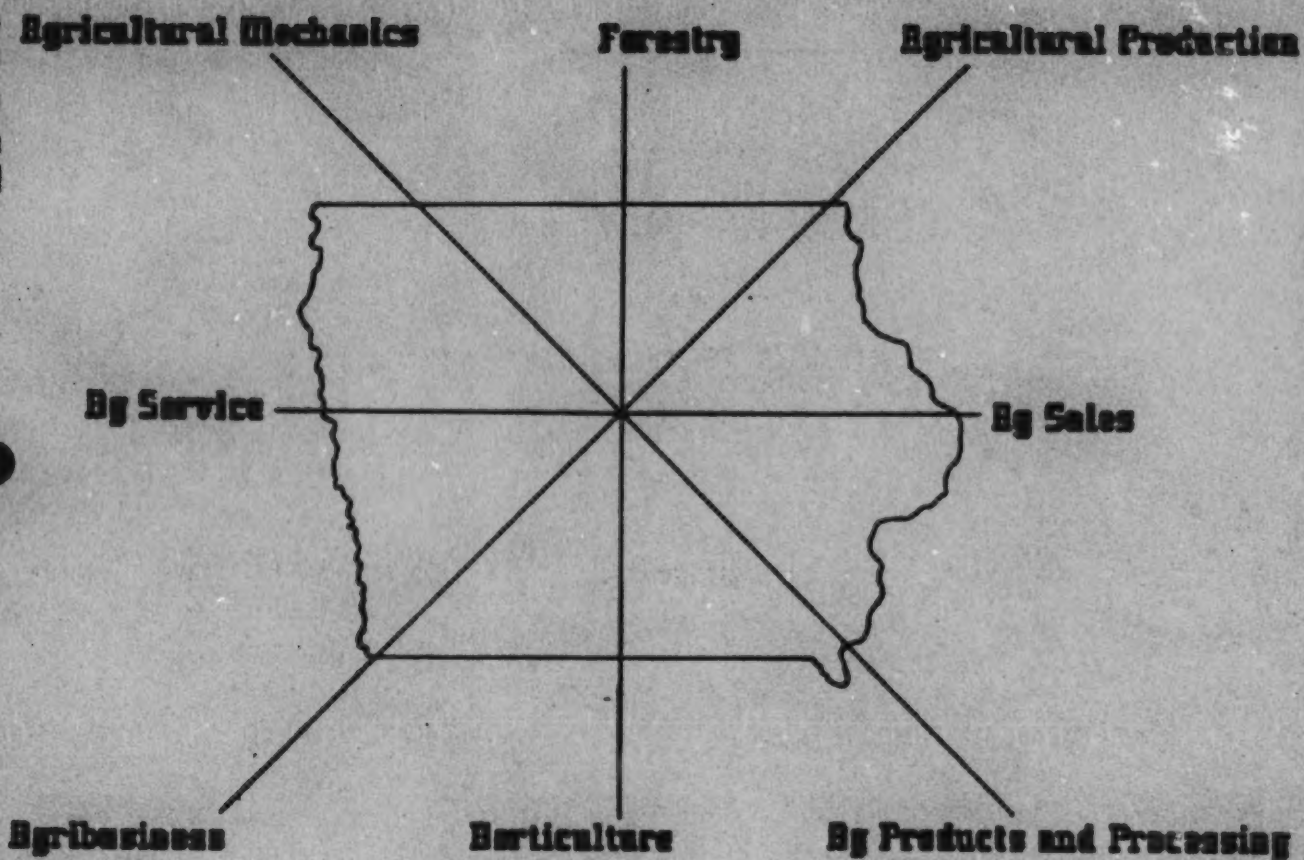
Each section contained in this packet is necessary for designing an effective program of agriculture education. The curriculum guide that is developed from this model should include the same sections. The model includes: (1) community description; (2) school description; (3) goals and objectives of education in agriculture; (4) evaluation policy; (5) development procedures for an advisory committee; and (6) unit outlines. Unit outlines are examples of Iowa's vocational education in agriculture programs, which are intended to help students apply communications, situational analysis, and problem-solving skills to agricultural work settings. Each unit contains the following information: course name; unit name; unit objectives; introduction/situation; unit sequence--problem area(s), lesson title, and lesson objectives; and unit evaluation. Section I contains six units: home landscape maintenance; house plant propagating and care; turf management; windbreaks; fruit and vegetable crops; and potted mum production. Four units in section II cover these topics: agriculture processing--meats; biological farming; daily personal skills; and farm law. Section III includes six units: tomato production; strawberry production; sweet corn production; lawn care; pasture management; and corn production. Topics in section IV are as follows: chain saw safety; arc welding; farm wells; water quality; plumbing; and liquid petroleum gas. Section V contains eight units: hunting and hunter safety; predator control and trapping; game bird production; beekeeping/honey production; small animal pets; animal rights in veal production; dairy production; and beef production. (NLA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

IA87PD25

Model Course of Study for Agricultural Programs in Iowa

ED339895



Preparing for the Future

CE059 FS1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
J. Mathers
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

Model Course of Study
for
Agricultural Programs in Iowa

by

Robert A. Martin
Project Director

Thomas C. Cooley
Stephen P. Martley
Project Assistants

Iowa State University
Department of Agricultural Education
217 Curtiss Hall
Ames, Iowa 50011

and

Iowa Department of Education
Grimes State Office Building
Des Moines, Iowa 50319

1987

Contents

Acknowledgements

Introduction

Community Description

School Description

Goals and Objectives

Evaluation Policy

Advisory Committee

FFA Policy

Supervised Agricultural Policy

Adult Education

Unit Outlines

Section I

Home Landscape Maintenance and Management
House Plant Propagation and Care
Turf Management
Windbreaks
Fruit and Vegetable Crops
Potted Mum Production

Section II

Agricultural Processing - Meats
Biological Farming
Daily Personal Skills
Farm Law

Section III

Tomato Production
Strawberry Production
Sweet Corn Production
Lawn Care
Pasture Management
Corn Production

Section IV

Chain Saw Safety
Arc Welding
Farm Wells and Water
Water Quality
Plumbing
LP Gas Use in Agriculture

Section V

Hunting and Hunter Safety
Predator Control and Trapping
Game Bird Production
Beekeeping/Honey Production
Small Animal Pets
Animal Rights
Dairy Production
Beef Production

Acknowledgements

Appreciation is expressed to all those people who have assisted in the development and production of this model curriculum/course of study guide. Most of the unit outlines were developed by vocational agriculture teachers who attended and participated in workshops related to enhancing and revitalizing vocational agriculture programs in Iowa.

Much credit should be given Thomas C. Cooley and Stephen P. Martley for writing various materials in the guide and designing the cover and dividers.

Funds for this project were provided by a grant from the Iowa Department of Education entitled "Revitalizing Vocational Agriculture Programs in Iowa."

Robert A. Martin

Introduction

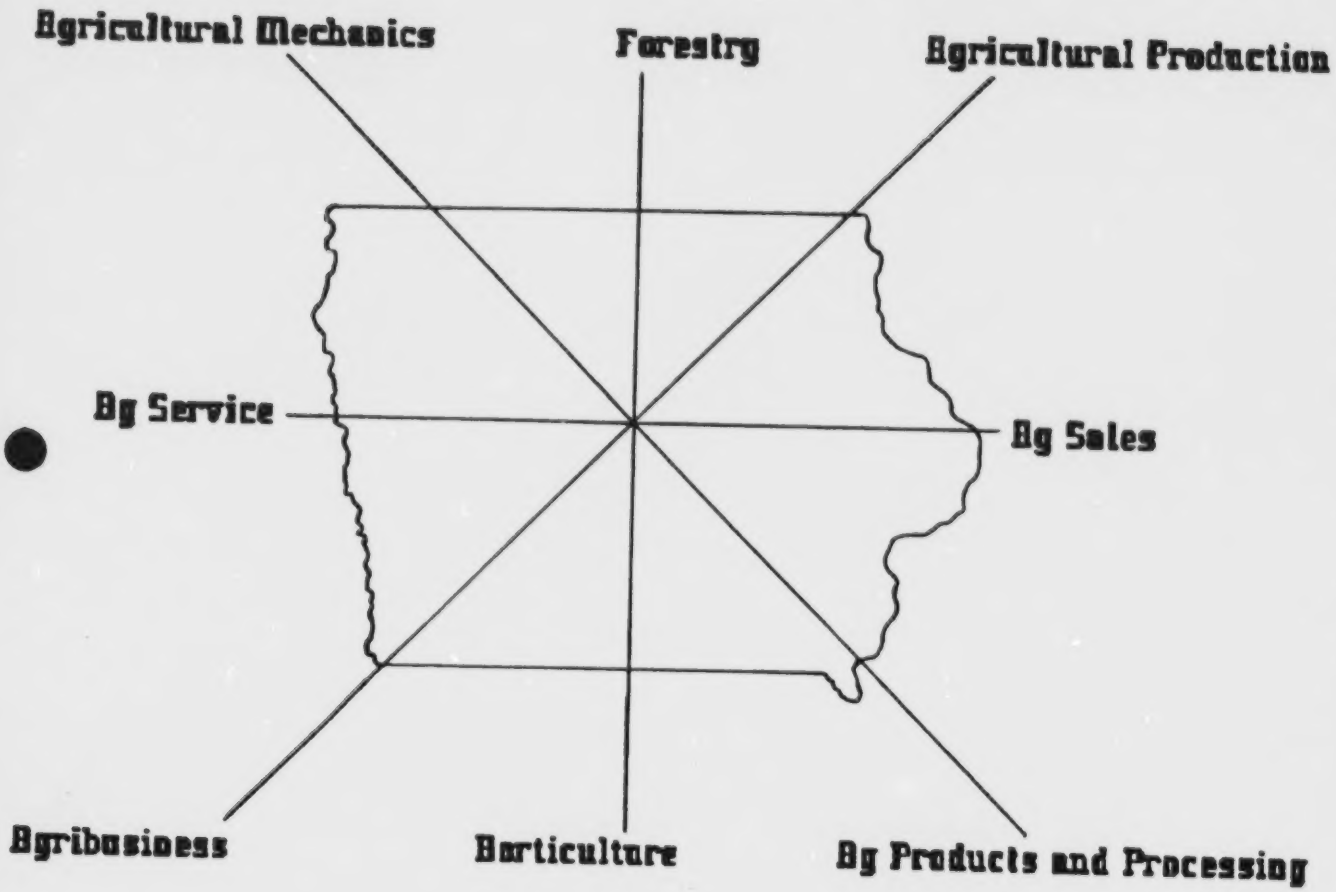
Programs of vocational agriculture are in constant need of revision. The dynamic agriculture industry forces changes to be made in curriculum development. The purpose of this guide is to provide a model for revitalizing the curriculum of agriculture education programs. By correcting problem areas and by including the factors set forth in this packet, programs should be able to be justified. As with any model, the information in this packet is to be used only as a guide. Having a copy of this packet will not guarentee that programs will continue, but a curriculum guide, specific to the situation, and community, will help to justify the program.

Each section contained in the packet is necessary in desgning an effective program of agriculture education. The curriculum guide that is developed from this model should include the same sections. The model contains: 1) community description, 2) school description, 3) goals and objectives of education in agriculture, 4) unit outlines, 5) evaluation policy, 6) development procedures for an advisory committee, 7) FFA policy, 8) Young and Adult Farmers, and 9) Supervised Agricultural Experience.

Development of each section of your course of study guide will be dependent on several factors. Here is a list of items to consider:

1. Who will be served by the Vocational Agriculture Program?
2. What are the major agricultural enterprises, businesses, and occupations in the area?
3. What does the community want from the Vocational Agriculture Program?
4. Are there special students who will need assistance?
5. What are the school's objectives?
6. What resources are available in the area?
7. What do student's want from the program?
8. What type of facilities are in the department?
9. What are the program's weaknesses? strengths?
10. What trends are appearing that will influence the program?

COMMUNITY DESCRIPTION



Preparing for the Future

Community Description

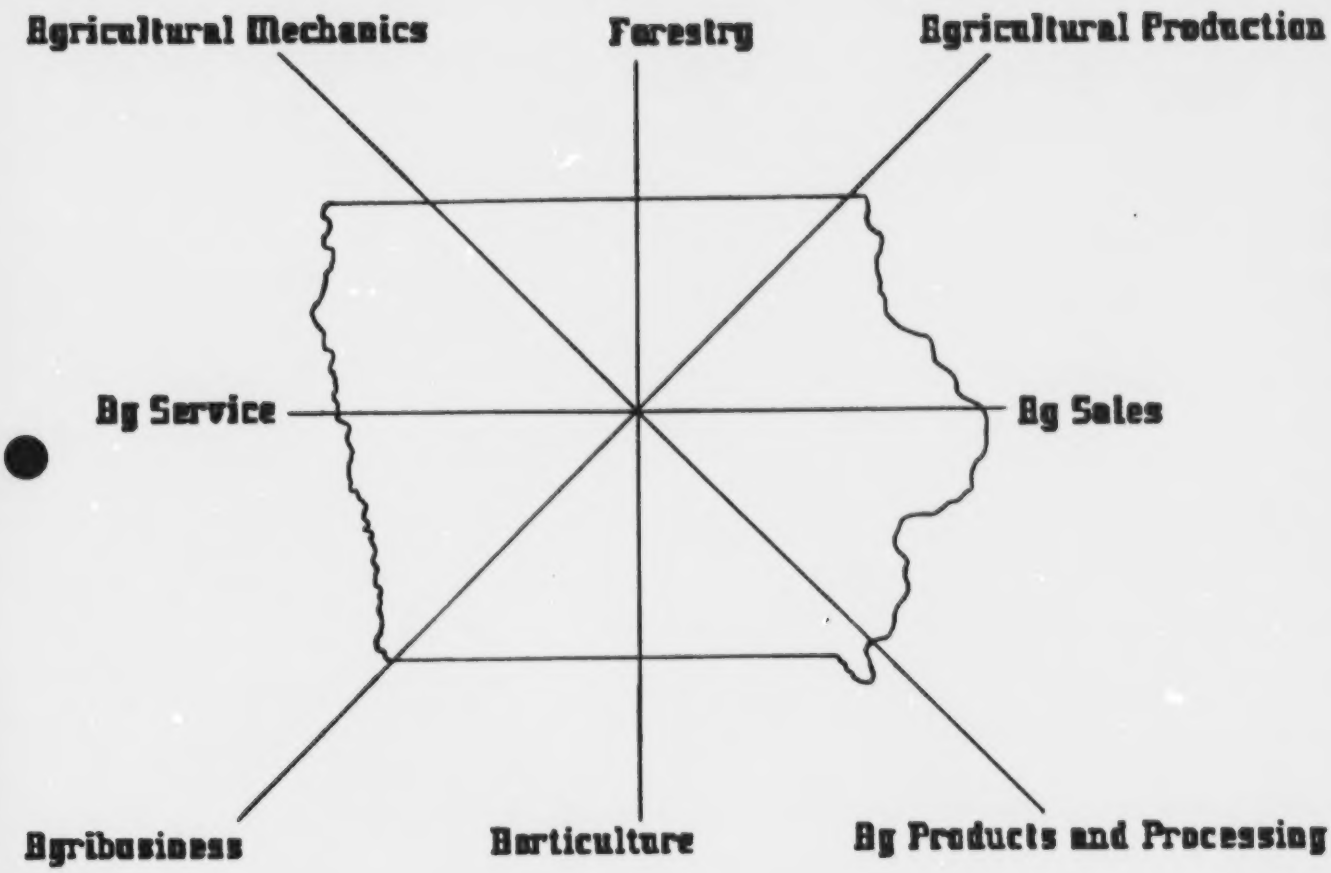
Corydon, Iowa is located in Wayne County, which is centrally located on the bottom tier of counties in Iowa. There are 8200 people in Wayne County and Corydon, the county seat, has a population of 1800. Wayne County has 13 small communities. Over 99% of the population is white and there is a variety of cultures represented. Nearly 25% of the citizens are over 65 years old. Over 60% of the houses in the county were built before 1939. About half of the county's residents earn under $10,000 a year. Only 7% of the residents have a college degree. Nearly all of the residents were born in Iowa.

Farming is the primary business in the area. Most of the businesses in the area are agricultural related. Only 25% of the farms are over 500 acres. Seventy-five percent of the farmers reside on their farm. Average farm size is 350 acres. Forty percent of the income is from crops and the balance is from livestock or livestock products. Ninety percent of the farms are family farms. The focus of agriculture in the area is on corn, soybeans, cattle, and hogs. There is very little emphasis on speciality crops or livestock. The topography ranges from high producing flatlands to clay slopes that can barely support grass.

The predominant religions are Protestant. Every town has a number of active civic organizations. There are many social groups, too. In Corydon, there is a bandshell, public swimming pool, baseball diamond, tennis and basketball court. In the area is a rollerskating rink and many nature trails. The largest lake in Iowa, Rathbun Lake, is located 30 miles from Corydon. There is an abundance of wildlife in this area. Lake Rathbun also operates a fish hatchery. Camping, fishing, sailing, and skiing are popular at the lake.

The only higher educational institution in the area is Indian Hills Community College. The closest state university is 90 miles from Corydon.

SCHOOL DESCRIPTION



Preparing for the Future

Corydon School Description

Wayne Community High School is located in central Wayne County in the town of Corydon. The main school building was built in 1923 with additions added in 1965 and 1987. The senior high includes grades 9 through 12 with an enrollment of about 250. The junior high enrollment is about 110 pupils. There is one elementary school with a K-6 enrollment of about 800 pupils.

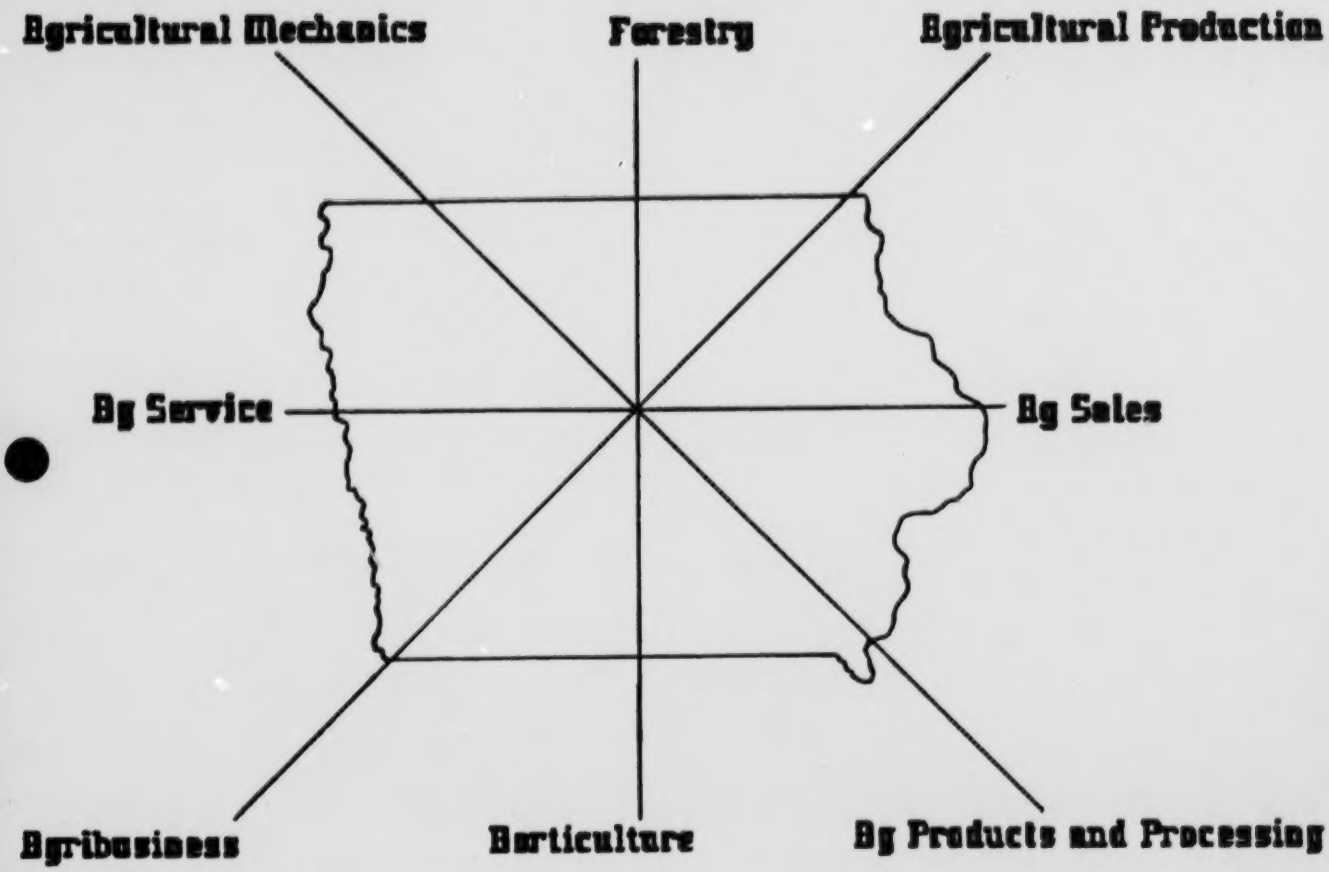
As with many schools in the area, Wayne Community is experiencing a period of declining enrollment. But, the enrollment in vocational agriculture has steadily increased over the past three years. For this reason, part of the new school edition will be used for vocational agriculture.

Clubs and sports are very important in the school, with each area recieving much public support. The important clubs include Future Farmers of America, Future Business Leaders of America, Future Homemakers of America/HERO, and the Science Club. In sports, teams range from golf to football, with both men's and women's teams doing well in the past years. Band is also a major activity, with a reputation for being one of the best in the conference. Members have competed and won awards in marching and concert competitions at local, state, and national levels.

Wayne Community High School has consistently performed well academically compared to other schools its size. The school consistently has one to three National Merit Finalists or Semi-Finalists each year. The school offers a variety of programs including college preparatory, business education, industrial arts, home economics, and vocational agriculture.

The vocational agriculture department has one teacher for approximately 70 students, including an 8th grade pre-vocational program. This program is combined with other programs, such as business and college preparatory courses, for students to suit their own individual educational needs.

GOAL AND OBJECTIVES



Preparing for the Future

Goals and Objectives of Education in Agriculture

The main goal of vocational education in agriculture is the development of an awareness of the many career opportunities in the industry of agriculture. The educational program seeks to help students develop a broad set of skills related to communications, situational analysis, and problem solving and apply them to real life situations in agricultural work settings.

The major objectives of the Vocational Agriculture Department are as follows:

1. To help students develop competencies in all occupational areas of agriculture: production, mechanization, sales and service, conservation and natural resources, forestry, horticulture, and products and processing.

2. To assist present and potential agriculturalists in improving their efficiency in their selected areas of interest.

3. To develop student leadership and citizenship skills through the Future Farmers of America and the Young Farmers Association.

4. To develop business and farm management skills through Supervised Agricultural Experiences.

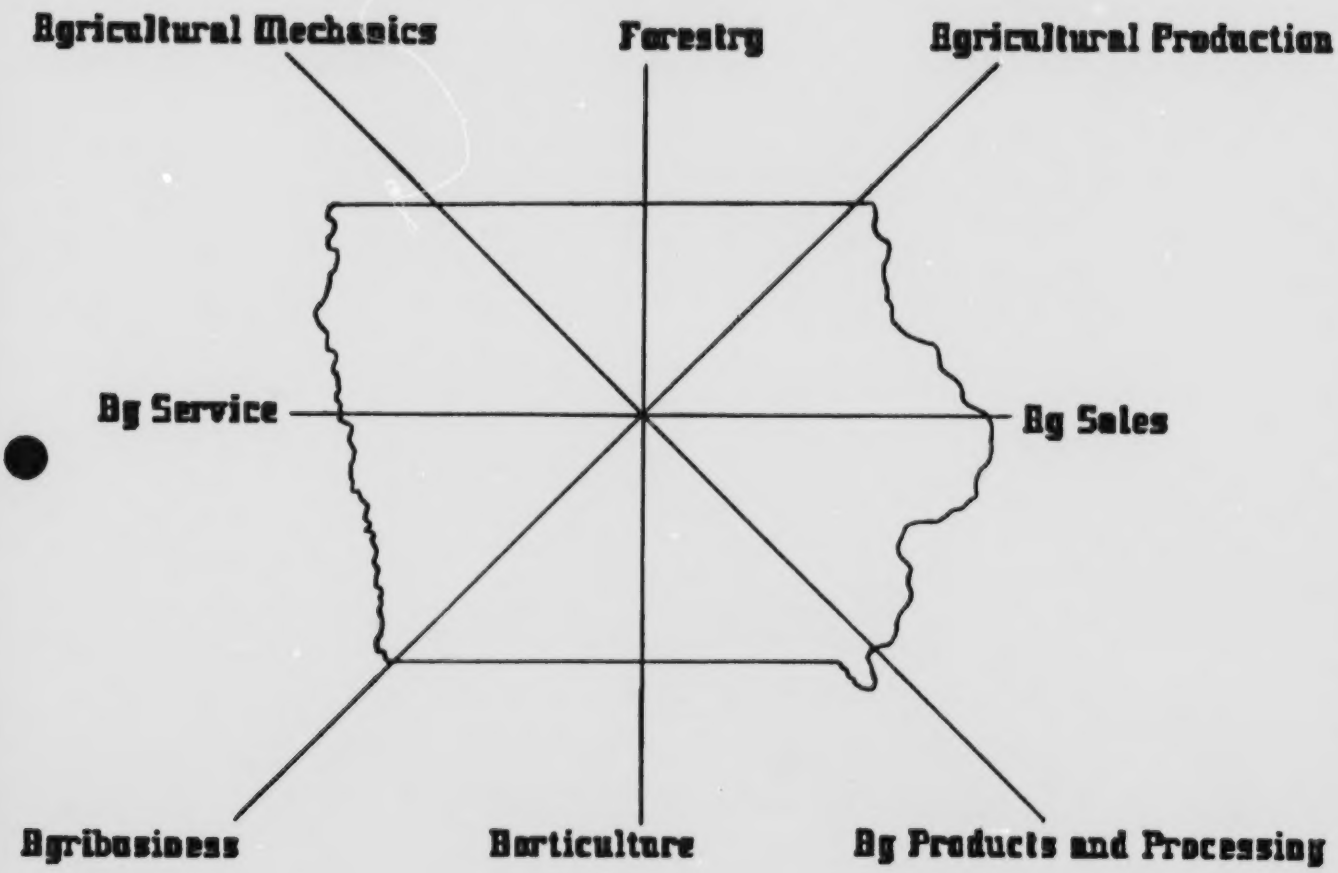
5. To assist students in developing the attitudes, understandings, and abilities necessary for successful entry and advancement in agricultural opportunities.

6. To develop basic skills such as reading, writing, and mathematics by use of applied situations and activities.

7. To develop the ability to secure placement and to advance in an agricultural occupation through a program of continuing education.

8. To develop human relations skills required for employment in agricultural occupations.

EVALUATION POLICY



Preparing for the Future

Evaluation Policy

The instructor(s) will evaluate students in the three areas of the Vocational Agriculture Program: 1)Classroom and Laboratory learning, 2)Supervised Agricultural Experience program, and 3)Future Farmers of America activities The instructor(s) should encourage the student to participate in all three phases of the program. Involvement in all three phases will facilitate meeting departmental goals and objectives.

Each unit of instruction will incorporate various and specific student learning activities such as quizzes, skill sheets, tests, reports, participation, and demonstrations. Students will be informed regarding the specific requirements and expectations. Emphasis will be placed on the scientific technological aspects of agriculture and its application to real-life situations. Students will be expected to demonstrate skill in basic mathematics and communications.

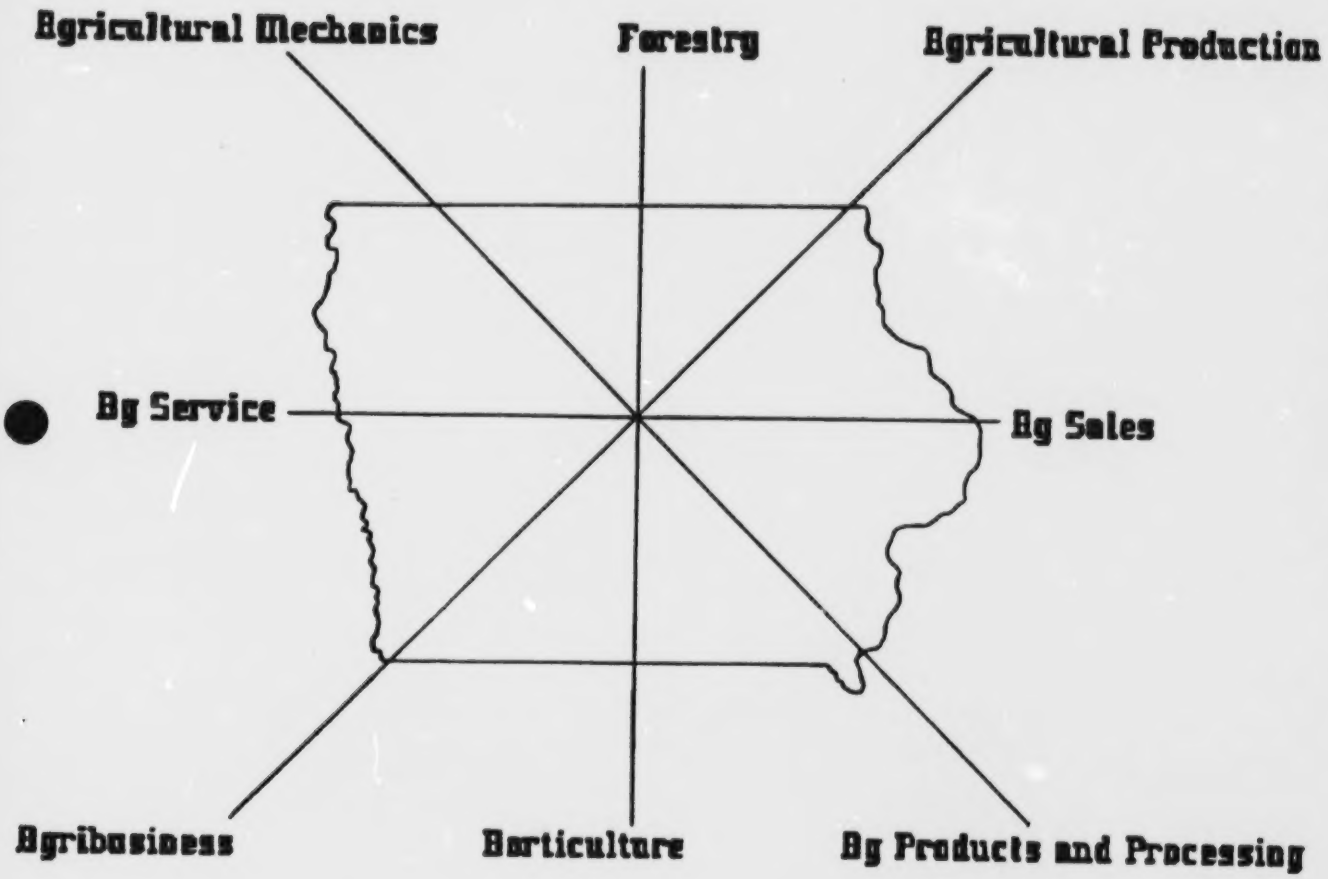
Classroom and laboratory learning will be evaluated objectively and subjectively. Objective evaluation will consist of tests and quizzes covering lecture material, notes, handouts, guest lecturers, or field trips. The tests and quizzes will contain short answer, multiple choice, matching, and fill in the blank. Oral presentations will be included in objective evaluation. Students will be evaluated by the instructor and class peers for content, delivery, and style. Projects will be part of the objective evaluation. Projects will allow individual diversity to be expressed but, will be guided by the course material and individual needs. Worksheets, notebooks, and daily assignments will make up the balance of the objective evaluation. Subjective evaluation includes observation of the student's attitudes, behavior, work ethic, and participation.

The Supervised Agricultural Experience Program should be integrated into the evaluation of students. The instructor should assess development of occupational competencies, record keeping, pursuit of proficiency awards, performance of activities in an effective manner, and achievement of goals.

In evaluating the Future Farmers of America area of the program,participation in activities will be of primary importance.

A 90/80/70/60 grading scale will be used in the classroom and laboratory learning area. Seventy percent of the course grade will be from the evaluation of the classroom and laboratory learning. Supervised Agricultural Experience and Future Farmers of America activities will each be given a value of 15 percent.

ADVISORY COMMITTEE



Preparing for the Future

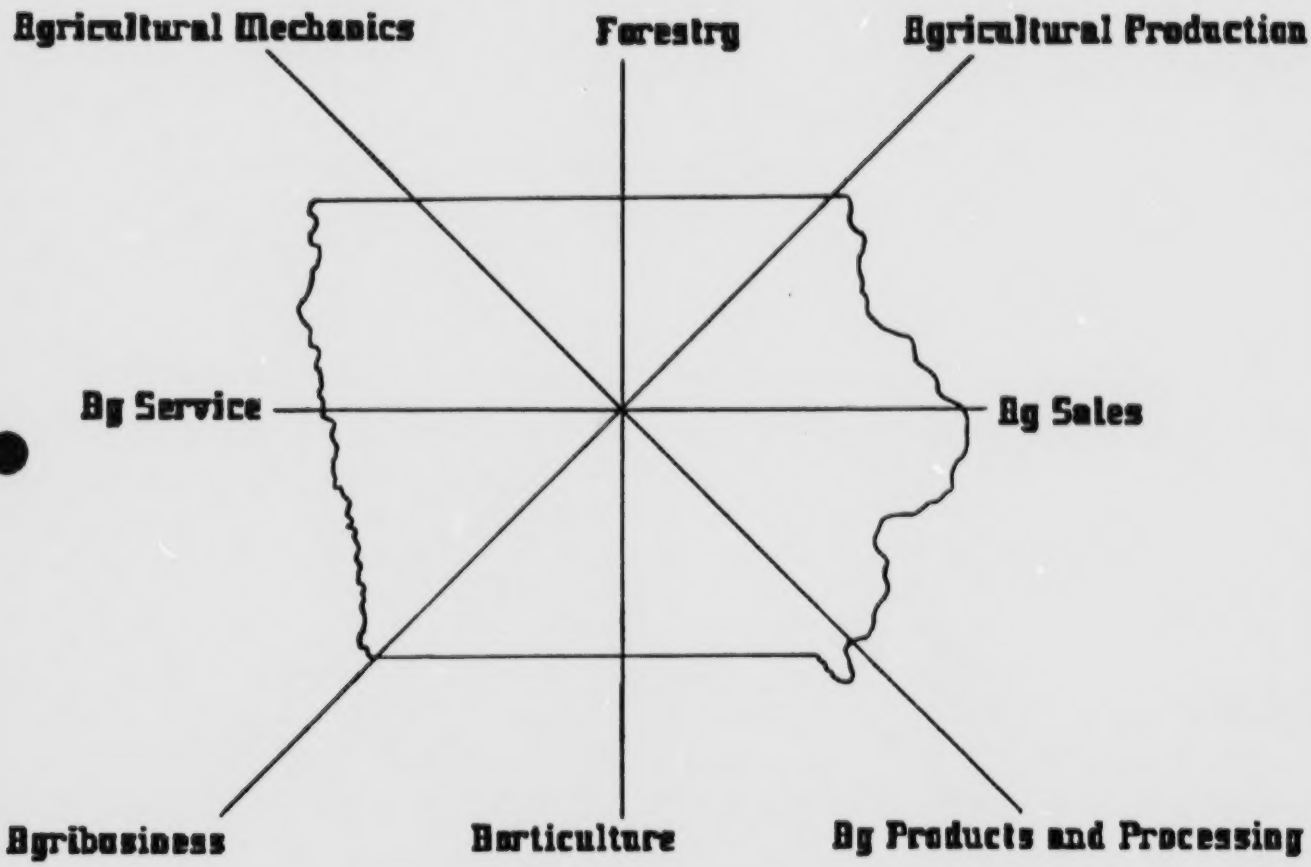
Development of Advisory Committee

The first step in development of an advisory committee is to secure permission from the school administration and board of education to organize and use an advisory committee. After the school administration and the board of education has given approval, selection of committee members can begin. It is important that the committee be a cross-section of the community so that the goals and objectives of the committee can be met. The next step will be to compile a list of possible nominees. The possible nominees will be sent a letter explaining the goals and objectives, functions, and limitations of the committee as well as the specific roles of committee members. Those agreeing to serve will be put on a list of potential nominees. A list of potential advisory committee members will be submitted to the school board for appointment. The board will appoint a committee of 9 members. The first meeting of the committee will consist of a complete explanation of the roles and responsibilities of the members as well as the functions of the committee. The members will serve for three years. Each year three member's position will be replaced. The committee will elect a President, Vice President, and Secretary yearly. The committee will meet at least two times a year. More meeting may be held if necessary. A specific agenda will be used at each meeting. A constitution and by-laws will be developed to govern the committee's actions. The school administration and board of education will be continually informed of committee activities.

The purpose of the advisory committee is to advise the vocational agriculture instructor in planning, organizing and evaluating the agriculture programs. The committee is an important link between the community and agriculture education program by sharing the needs and attitudes of the local area. The committee can assist in keeping the program up-to-date and provide direction for obtaining resources and materials from the community for conducting the educational program.

Details regarding the advisory committee are included as supplementary material.

FFA POLICY



Preparing for the Future

FFA Leadership Activities

"Through active participation in the FFA, members learn by taking part in and conducting meetings, speaking in public, participating in contests based on occupational skills, earning awards and recognition and becoming involved in cooperative efforts and community improvement. The FFA offers the opportunity for achieving a personal goal of becoming productive citizens in our society."

This statement, taken from the Future Farmers of America "Official Manual," serves as a basis for FFA in Corydon. FFA serves an integral part of the overall vocational agriculture program. It serves to provide learning in areas that could never be efficiently covered in the normal classroom setting.

The Wayne FFA Chapter has a long history of success in the FFA. This is indicated not only by the numerous plaques and trophies on display in the classroom, but also in the success of former members in areas such as business, farming, and management.

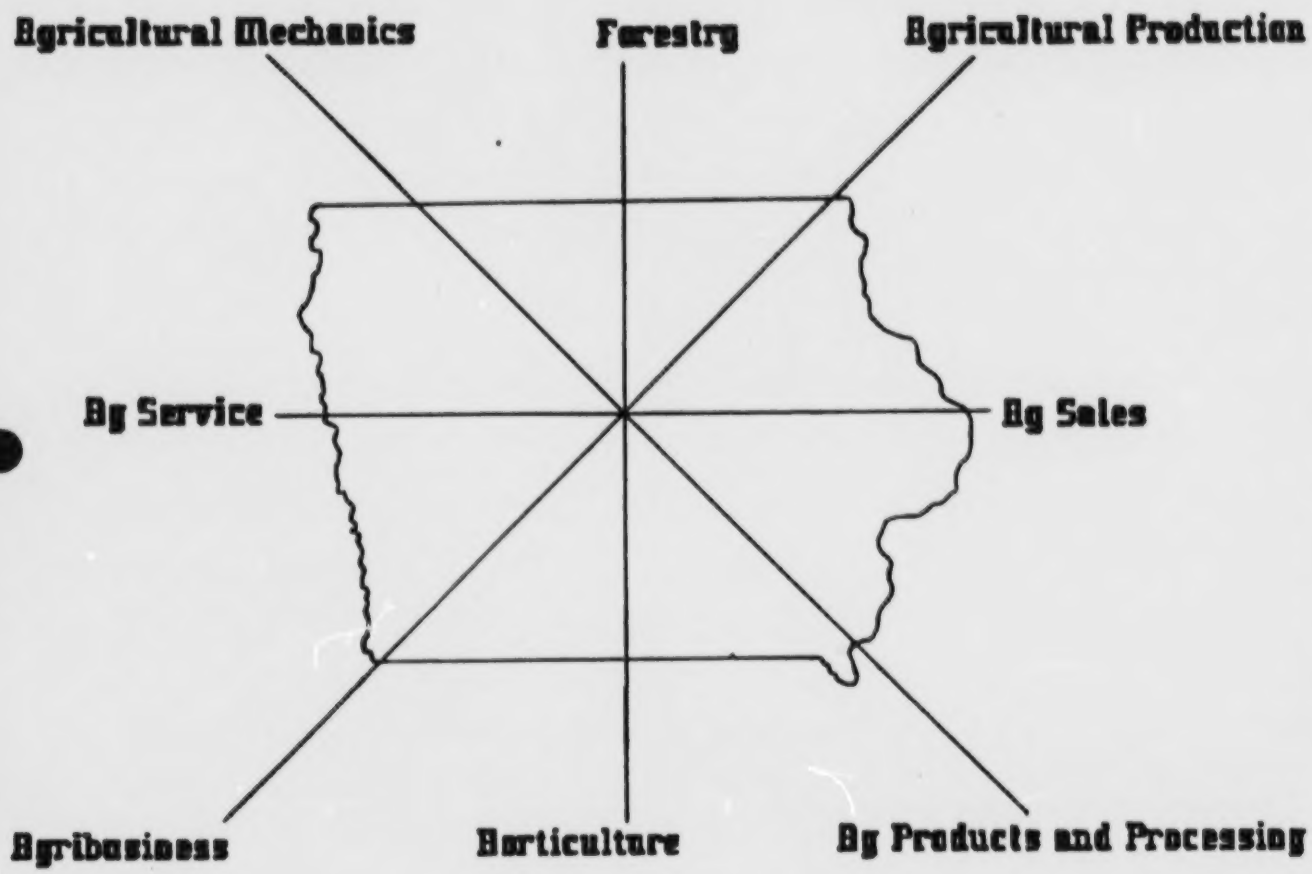
Membership in the FFA helps the student meet the departmental goals and objectives. Leadership and citizenship skills, as well as human relations skills, will all be developed through active participation in contests, conferences, and other programs sponsered by the FFA. For these reasons, 15% of the student's grade is based on participation in the Future Farmers of America.

The Future Farmers of America is a national organization for students involved in vocational agriculture. The FFA has been an intregal part of vocational agriculture since its founding in 1928, by providing many opportunities for student learning and development. Through a combination of classroom instruction, laboratory activities and the SOEP, students develop leadership and human relation skills and are recognized for their talents and efforts through awards and advanced degrees.

Parents, local businesses, administration and the community are encouraged to offer full support of the FFA. Every person in the local community will benefit from the results of an active FFA chapter. Students will be offered a wider range of educational experiences. Alumni are asked to help promote an organization in which they can still participate by sharing acquired knowledge and skills.

The chaper membership will be responsible for conducting the local FFA. It will operate under a Program of Activities developed by chapter members. The administration and chapter advisor will oversee the workings of the chapter. The opportunities for members to gain experience in different areas is limited only by their output. Each student will be encouraged to actively participate in activities of interest.

SUPERVISED AGRICULTURAL EXPERIENCE PROGRAM



Preparing for the Future

Supervised Agricultural Experience

The Supervised Agricultural Experience is part of a program that is beneficial to its participants in many ways. The most obvious is that of taking knowledge that is learned in the classroom, and applying it in a hands-on situation. This not only helps the learning process, but it also helps the student to understand the concepts and the reasons for learning.

The SAE goes far beyond this however. In selecting and planning for an SAE, students learn to set goals and strive for those goals. They become more aggresive in their endeavors as they expand their enterprises and take on more responsibilities in their jobs. By getting this experience, students begin to set occupational goals over and above their SAE goals.

The importance of complete, sound record keeping is realized and experience is gained in keeping those records through their SAE. This also encourages application for FFA degrees and awards as record keeping is an important part of these honors.

By working at their SAE, many times making money, students develop a sense of job satisfaction, self-confidence and independence. Experience and job skills are provided through an SAE and many times the door is opened for a career after graduation.

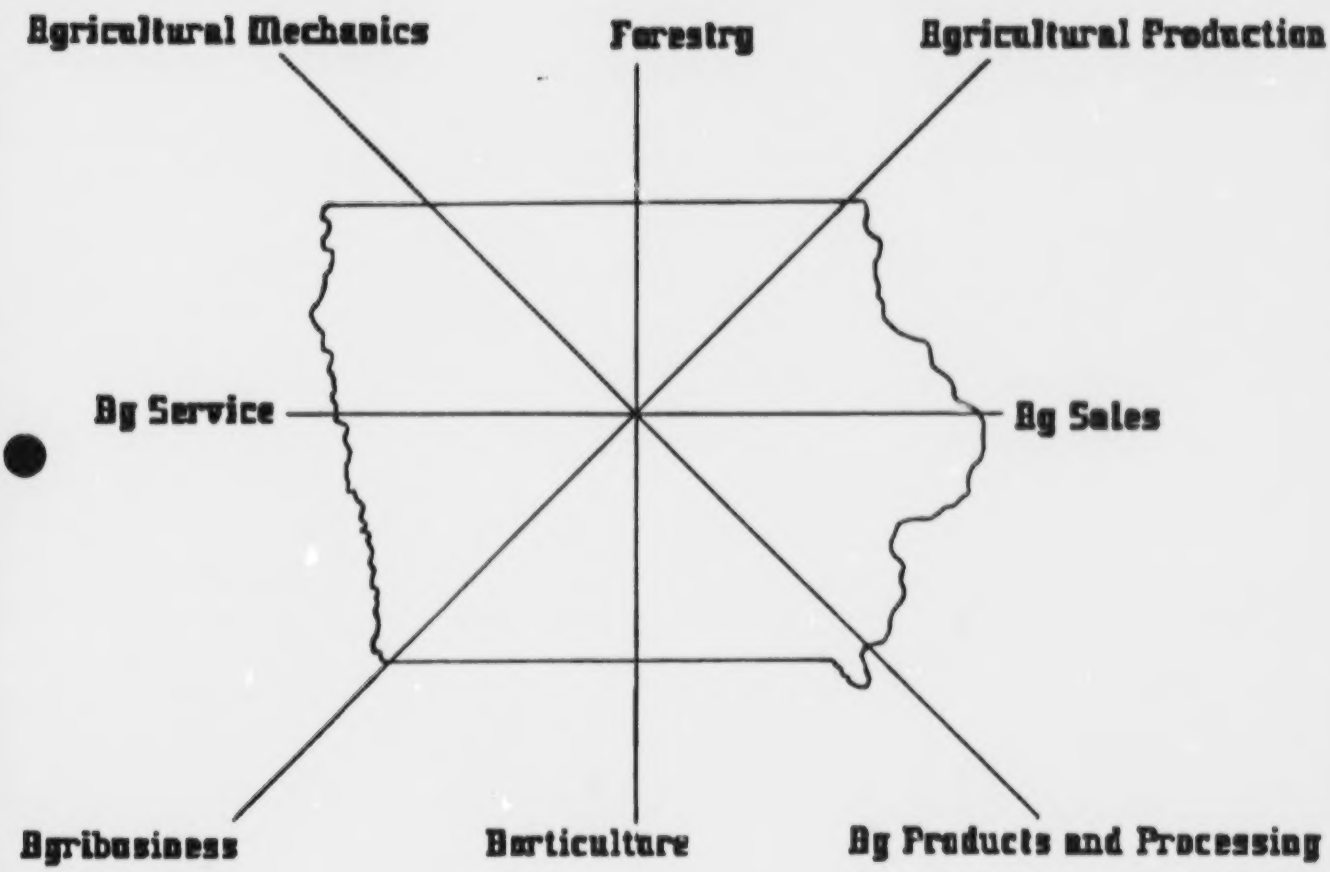
The SAE helps develop human relations skills by allowing the students to interact with producers, suppliers and the public. They learn basic citizenship traits and become exposed to financial dealings that they may have otherwise never had the chance to do.

SAE is a vital part of the Vocational Agriculture program. The inclusion of this component into the program facilitates the achievement of goals and objectives of both the schools and vocational education program in agriculture. The SAE provides a real-life laboratory for the principles taught in the classroom and the FFA.

The SAE involves a cooperative effort between the student, teacher, parents, and cooperator (industry or agri-business). It is the teacher's responsibility to develop a resource list of experiences. The teacher will be accountable for overseeing the total experience. The parents will help in identifying a possible experience for encouraging the student and for providing a good role model. The student should be able to identify an area of interest for a Supervised Agricultural Experience. Experiences could range from owning a business, observation of an agribusiness, managing wilflife, taking charge of a livestock production operation. The teacher, prospective cooperator and student will need to develop a contract for the experience. The evaluation will be based on the fulfillment of the contract.

Supervised experiences in agriculture should be as broad-based as possible to allow for varied student interests. There should be no strict pattern for SAE. The goal is to get experiences in agriculture.

YOUNG AND ADULT FARMERS



Preparing for the Future

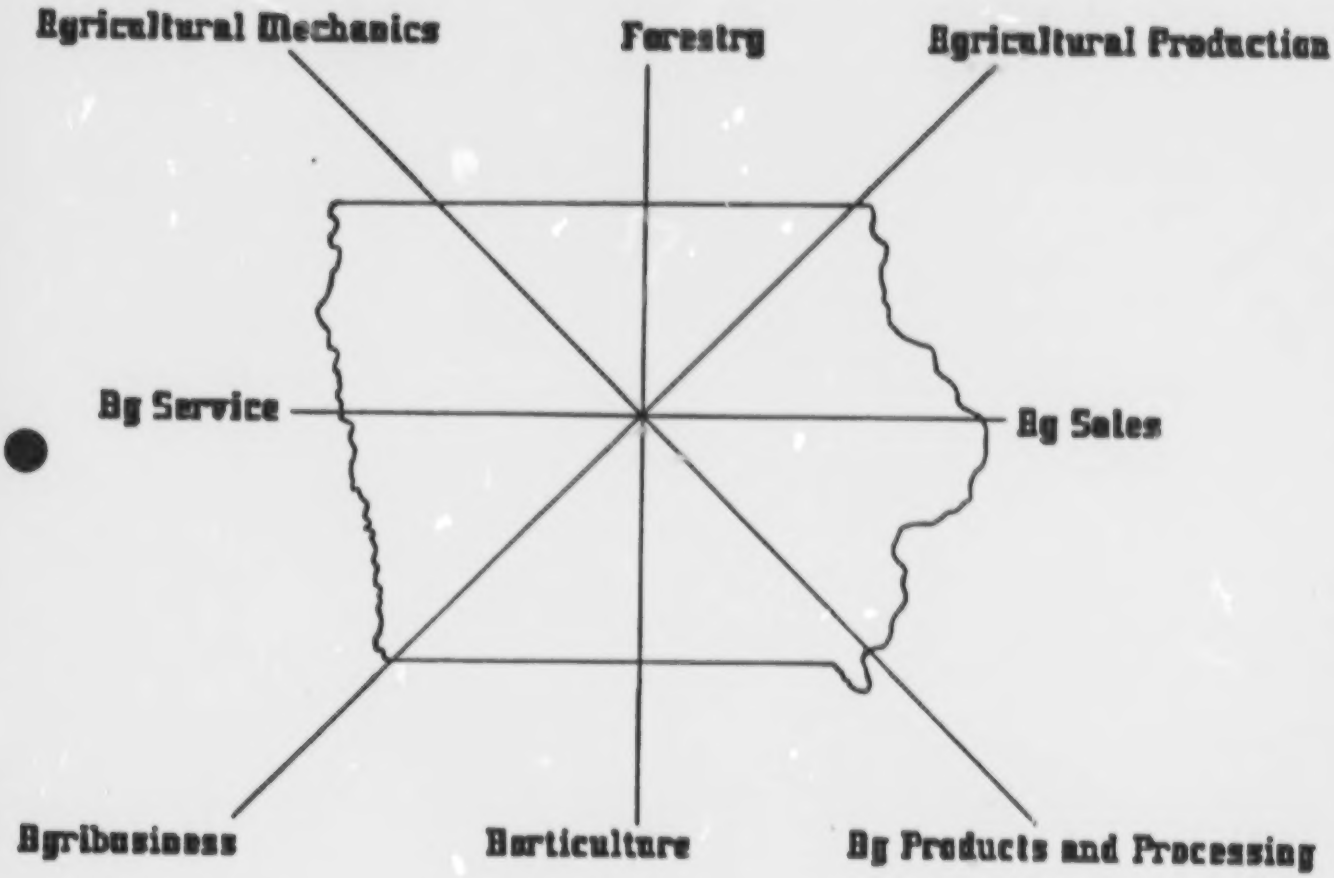
Adult Education in Agriculture

The agricultural industry is dynamic ever-changing and action-oriented. Young and adult farmer education in agriculture is also characterized by these terms. Continuing education is the wave of the present and future. Participants in the dynamic industry of agariculture realize that they need education, retraining and updating.

Adult education programs are organized on an annual basis in this school district. The following guidelines are used to conduct the program. The advisory committee, young and adult farmers and agri-businessmen and women assist in planning programs in adult education.

1. Study needs
2. Involve clientele in planning
3. Formulate goals and objectives
4. Organize people, data, things
5. Develop program announcements
6. Send reminder cards
7. Present programs using local resources
8. Base discussion on problem solving
9. Develop leadership and technical skills
10. Share approved practices
11. Follow-up clientele
12. Evaluate programs
13. Provide media with information
14. Write a final report
15. Conduct social event

UNIT OUTLINES



Preparing for the Future

Unit Outlines

The unit outlines in this publication are only examples of units that could be included in an agriculture department's course of study guide. They were developed by teachers of agriculture. These units do not represent the entire program. Many of these unit outlines represent examples of new or innovative areas of instruction in agriculture. Individual instructors must make the necessary changes to these units and add other units to make a complete program fit local needs, situations and resources.

Time frames for each unit will need to be decided at the local level. For example, some teachers may spend a week on the beekeeping unit, others may spend 2 or 3 weeks.

Unit outlines as presented here are an excellent organizational tool for instruction in that they focus teaching and learning on specific objectives. Unit outlines are excellent accountability tools because they specify what knowledge and skills will be learned and they can specify the evaluation students will receive.

Section I

Home Landscape Maintenance

House Plant Propagation and Care

Turf Management

Windbreaks

Fruit and Vegetable Crops

Potted Mum Production

COURSE Horticulture

UNIT Home Landscape Maintenance and Management

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the management practices required to maintain and improve existing lawns, trees, shrubs, ground covers, and bedding plants surrounding their home.

2. Design and develop plans for future improvements to landscape their home.

3. Select the proper plant materials, tools, equipment, and machinery required to landscape their home.

INTRODUCTION/SITUATION

Since many students live in houses owned by family members or will reside in houses they own, they will be directly involved in many aspects of landscape maintenance and management. This landscape will undoubtedly include many, if not all, of the following groups of plant materials: lawns, trees, shrubs, ground covers, and bedding plants. Therefore, it is important that students know the basic practices and skills associated with landscape maintenance and management. This important area of horticulture is also a rapidly expanding area for career development and many opportunities exist for employment on either a full-time or part-time basis. This unit will require approximately twenty teaching days or whatever is most appropriate to the situation.

UNIT SEQUENCE

PROBLEM AREA Preparing a Management Plan

Lesson Title Lawn Maintenance and Management

Lesson Objectives

1) Describe the basic steps required to develop a calendarized management plan for lawns and turfgrasses.
2) Identify and perform those practices required in their management plan.
3) Estimate the costs associated with the job breakdown in their management plan.

Lesson Title Tree Maintenance and Management

Lesson Objectives

1) Describe the basic steps required to develop a calendarized management plan for trees.
2) Identify and perform those practices required in their management plan.
3) Estimate the costs associated with the job breakdown in their management plan.

Lesson Title Ground Cover and Bedding Plant Maintenance and Management

Lesson Objectives

1) Describe the basic steps required to develop a calendarized management plan for ground covers and bedding plants.

2) Identify and perform those practices required in their management plan.

3) Estimate the costs associated with the job breakdown in their management plan.

PROBLEM AREA — Selection of Plant Materials

Lesson Title — Identifying Plant Materials

Lesson Objectives

1) Describe and identify at least ten different plants growing on their home landscape.

2) List and describe the local environmental conditions in which these plants grow.

3) Select the appropriate replacement plants for their home landscape.

PROBLEM AREA — Maintenance of Soil Fertility

Lesson Title — Identifying Plant Nutrient Requirements

Lesson Objectives

1) List and describe the primary and secondary nutrient requirements of ten plants on their home landscape.

2) Obtain soil samples and interpret results of soil tests.

3) Recognize symptoms of nutrient deficiencies and toxicities and take steps to correct them.

PROBLEM AREA — Application of Chemicals

Lesson Title — Applying Chemicals Safely and Correctly

Lesson Objectives

1) Select the most appropriate chemical for the action desired.

2) Explain the procedure for safe and effective application.

PROBLEM AREA — Controlling Pests and Diseases

Lesson Title — Identifying Common Pests and Diseases

Lesson Objectives

1) Identify and describe one common disease and pest for each of the ten plants on their home landscape.

2) Explain the prevention and/or cure for the disease or pest.

PROBLEM AREA — Using Tools, Equipment, and Machinery

Lesson Title — Selecting Proper Tools and Equipment

Lesson Objectives

1) Select and explain the proper use and care of the tools, equipment, and machinery used on their job.

2) Identify different tools, equipment, and machinery used around their home landscape.

PROBLEM AREA — Career Exploration
Lesson Title — Analyzing Landscape Opportunities

Lesson Objectives

1) Evaluate the potential for developing this enterprise into a career opportunity.

UNIT EVALUATION

	VALUES
Daily evaluation on class participation (20 days @ 2 points/day)	40
Unit test	30
Quizzes (Three @ 10 points each)	30
TOTAL POINTS------	100

COURSE Horticulture

UNIT House Plant Propagation and Care

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the management practices required to grow house plants.

2. Develop an appreciation for the aesthetic value of house plants.

3. Develop an interest in the career opportunities in horticulture.

INTRODUCTION/SITUATION

This unit has been specifically designed for those agriculture programs without greenhouses at their schools. This unit will require approximately three weeks of class time during the second year of vocational agriculture. This unit should precede such related units in horticulture as fruit and vegetable production which may follow later in high school.

UNIT SEQUENCE

PROBLEM AREA — Selection of House Plants

Lesson Title — Identifying House Plants

Lesson Objectives

1) Identify, describe, and list the physical characteristics of at least fifteen common varieties of houseplants.

Lesson Title — Identifying Environmental Requirements of House Plants

Lesson Objectives

1) Identify and describe the environmental factors affecting house plants.

2) Select the proper houseplant species and variety for a given environment.

PROBLEM AREA — Propagation of House Plants

Lesson Title — Propagating House Plants by Cuttings

Lesson Objectives

1) Identify and list at least three different methods of propagating house plants by cuttings.

2) Identify at least ten house plants which may be propagated by cuttings.

3) Propagate ten house plants from cuttings.

Lesson Title Propagating House Plants from Seeds

Lesson Objectives
1) Identify at least ten house plants which may be propagated from seeds.
2) Propagate ten house plants from seeds.

PROBLEM AREA Selecting a Growing Medium
Lesson Title Mixing Potting Soil

Lesson Objectives
1) Identify the essential components of an ideal potting soil.
2) Prepare three different mixtures of potting soils for different houseplants.

Lesson Title Providing Proper Soil Nutrients

Lesson Objectives
1) List the essential nutrients needed by all house plants.
2) Identify deficiencies and toxicities of soil nutrients on house plants.
3) Describe and perform the proper techniques for watering houseplants.

PROBLEM AREA Selecting Proper Containers
Lesson Title Matching Plants With Containers

Lesson Objectives
1) Identify five different types of house plant containers.
2) Transplant at least three different house plants using the proper containers.

PROBLEM AREA Maintaining Healthy Plants
Lesson Title Developing a Maintenance Program

Lesson Objectives
1) Develop a calendarized plan for fertilization, watering, and maintenance of houseplants.
2) Identify house plant pests and prescribe programs for their control.
3) Identify diseases of house plants and prescribe prevention programs for their control.

PROBLEM AREA Marketing House Plants
Lesson Title Establishing The Market

Lesson Objectives
1) List possible outlets for selling plants.
2) Describe ways and means of advertising.

Lesson Title Preparing Plants For Sale

Lesson Objectives

1) Identify wrapping and packaging techniques.
2) Prepare plants using foil, ribbon, and other decorations.

UNIT EVALUATION

	VALUES
Daily evaluation; class participation (10 days @ 4 pts/day)	40
Quizzes (Three $ 10 points each)	30
Unit Test	30
TOTAL POINTS	100

COURSE Horticulture

UNIT Turf Management

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline and describe the job and career opportunities in turfmanagement.

2. Outline and describe the management practices required to establish and maintain turf grasses.

3. Correctly use, maintain, and calibrate the equipment used in turf management.

INTRODUCTION/SITUATION

The establishment and maintenance of turf grasses offers students opportunities in supervised occupational experience as well as part-time and full-time employment during the spring and summer months. This unit is intended to be taught as a part of a Horticulture class and will be five teaching days in length, or whatever is appropriate.

UNIT SEQUENCE

PROBLEM AREA Career Opportunities in Turf Management

Lesson Title Occupations in Turf Management

Lesson Objectives

1) Identify occupations related to turf management.
2) Identify opportunities in turf management related to supervised occupational experiences.
3) Identify local job opportunities related to turf management.

PROBLEM AREA Selecting and Establishing Turf Grasses

Lesson Title Selecting Turf Grasses

Lesson Objectives

1) Identify varieties of turf grass best adapted for growing in the local community given its primary use.
2) Select varieties of turf grass best adapted for growing in the local community given its primary use.
3) Calculate the costs involved in estimating turf grass establishment and renovation.

Lesson Title Establishing Turf Grasses

Lesson Objectives

1) List and describe the requirements needed for the successful establishment of turf grasses.
2) Identify the proper steps involved in establishing turf grass.

PROBLEM AREA Maintaining Turf Grasses

Lesson Title Mowing Turf Grasses

Lesson Objectives
1) Identify the appropriate times for mowing grasses.
2) Explain the steps involved in determining the correct height of grass mowing.
3) Adjust equipment for the correct height of mowing.

Lesson Title Irrigating Turf Grass

Lesson Objectives
1) Explain the importance of watering turf grass.
2) Identify different irrigating techniques.

Lesson Title Fertilizing Turf Grass

Lesson Objectives
1) Identify the nutrients required by turf grass.
2) Explain the importance of the nutrients in maintaining turf grass.
3) Calculate the fertilizer costs for maintaining turf grass.

Lesson Title Controlling Pests and Diseases

Lesson Objectives
1) Identify common diseases of turf grasses.
2) Identify common insect pests of turf grasses.
3) Identify common weeds of local growing area.
4) Outline a control program for pests and diseases of turf grass.

Lesson Title Applying Chemicals

Lesson Objectives
1) Select the appropriate chemicals for the specific job.
2) Identify the correct procedures for handling, applying, and storing chemicals for turf grasses.

PROBLEM AREA Using and Maintaining Turf Grass Equipment

Lesson Title Using Equipment Safely

Lesson Objectives
1) List and describe common turf grass equipment.
2) List and describe the proper safety procedures for using turf grass equipment.
3) Perform simple maintenance operations of selected pieces of equipment.

UNIT EVALUATION

	VALUES
Quiz	20
Worksheet	15
Test	40
TOTAL POINTS	75

COURSE Horticulture

UNIT Windbreaks

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Explain the importance and economic value of windbreaks to the farmstead and livestock operations.

2. Select adapted trees and shrubs for their home operation.

3. Identify the proper trees and shrubs for their various uses.

4. Obtain cost-sharing data and prepare a budget for the operations.

INTRODUCTION/SITUATION

Many old windbreaks are in desperate need of replacement and rejuvenation, and many new houses and farmsteads are in need of windbreaks. Sophomore students will study this unit during five days. They could also assist in establishing a windbreak at school, home, or elsewhere in the community.

UNIT SEQUENCE

PROBLEM AREA The Economic Value of Windbreaks
Lesson Title The Economic Value of Windbreaks

Lesson Objectives
1) Determine the value of the windbreak to the farmstead and livestock.

PROBLEM AREA Selection of Trees and Shrubs
Lesson Title Selection of Trees and Shrubs

Lesson Objectives
1) Select adapted trees and shrubs for their particular use.
2) Become familiar with sources of plant material.

PROBLEM AREA Windbreak Location and Planting Procedures
Lesson Title Windbreak Location and Planting Procedures

Lesson Objectives
1) Select the appropriate location for trees and shrubs.
2) Determine the proper spacing for plant materials.

Lesson Title Windbreak Maintenance

Lesson Objectives
1) Control insects, rodents, weeds, and other pests injurious to plant materials.

PROBLEM AREA — Cost Sharing for Windbreaks

Lesson Title — Seeking Assistance

Lesson Objectives

1) Become familiar with agencies useful for assistance and cost-sharing.

Lesson Title — Budgeting for Planting

Lesson Objectives

1) Estimate the total expenses of planting a windbreak.

UNIT EVALUATION

	VALUES
Quizzes (2 @ 25 points each)	50
Unit Test	50
TOTAL POINTS	100

Course - Agricultural Production

Unit - Selection of Fruit and Vegetable Crops

Unit Objectives -

Identify factors that limit production of fruit and vegetable crops.

Select and procure adaptable fruit and vegetable crops.

Develop correct care and management techniques for the growing crop.

Identify factors which influence the marketing of fruit and vegetable crops.

Introduction/Situation -

Exploration of diversified fruit and vegetable crop production is an emerging goal of agriculture Iowa. This unit is designed for freshmen.

Sequencing Problem Areas and Lessons -

Problem Area - Fruit and vegetable crop adoption

Lesson Objectives - List factors affecting fruit and vegetable crop adoption.
- Select crop and list environmental factors for local adoption.

Problem Area - Selection and procurement of adaptable seeds or plants

Lesson Objectives - List available sources of seeds and plants.
- Make price comparisons
- Calculate amount of seed or plants needed.
- Calculate cost of seed or plants.

Problem Area - Production, care, and management of selected crop

Lesson Objectives - List ways of caring for seeds and plants upon their arrival.
- List steps in seedbed preparation.
- Identify planting methods.
- Develop a fertility program.
- List steps in pruning, training, etc.

Problem Area - Pesticide (chemical) Program

Lesson Title - Outline Control of Weeds

Lesson Objectives - Identify the 10 most prevalent weeds of this area.
- Select herbicides appropriate for the control of these weeds.
- Calculate amount of chemical needed and the correct application rate for a given situation.

Lesson Title - Outline Control of Insects

Lesson Objectives - Identify typical harmful insects of this area.
- Select appropriate insecticide(s) for control of these insects.
- Calculate chemical needs for a given situation.

Lesson Title - Outline Control of Fungi

Lesson Objectives - Identify common fungi of this area.
- Select appropriate fungicide(s) for their control.
- Calculate chemical needs for a given situation.

Problem Area - Marketing Fruit and Vegetable Crops

Lesson Title - Determining Harvest Maturity

Lesson Objectives - Locate and list market sources.
- Identify harvest methods.
- List specific harvest and marketing requirements.

Problem Area - Analyze Enterprise

Lesson Title - Cultivating Returns to Investment

Lesson Objectives - Calculate total costs/expenses
Calculate receipts
Calculate returns to labor/management

Course -- Greenhouse Production (G.P.)

Unit -- Potted Chrysanthemum Production

Unit Objectives --

Given mums and supplies, the student will produce and market a commercially acceptable crop of potted chrysanthemums.

Given the unit of instruction, the student will score 80% or better on a multiple choice examination on potted chrysanthemum production.

Given a record keeping book, the student will record cultural and financial information to the satisfaction of the instructor.

Introduction/Situation --

This unit will be taught as a beginning unit to the students studying greenhouse production. The chrysanthemums will be grown for the Thanksgiving holiday. The unit will take approximately ten weeks of class time. Potted chrysanthemums are produced in a number of small greenhouse operations in the community. Students have been placed for SOE in these small greenhouse operations in the past. One former student of this program now manages a local greenhouse growing operation. Many of the culturally approved greenhouse practices can be taught by growing chrysanthemums.

Sequencing the Unit
Problem Area -- Selecting Cultivars

Lesson Title -- Identifying pot mum colors and flower types
Lesson objectives -- Differentiate among pot mums, cut mums and garden mums
-- Identify ten flower types
-- List the basic colors

Lesson Title -- Identifying cultivars by week group and ordering pot mums
Lesson objectives -- Identify week group for cultivars
-- Order pot mums based on: cultivars available for pot mums, flower types, colors, and week group.

Problem Area -- Controlling Photoperiod

Lesson Title -- Predicting flowering
Lesson objectives -- Indicate critical day length and response to light (long, short, neutral)
-- Identify natural light period for producing mums
-- Production of quality mums from short, medium or tall varieties

Lesson Title -- Shading and lighting chrysanthemums
Lesson objectives -- Introduce light to the mums
-- Place shade cloth over the mums

Problem Area -- Planning a Pot Mum Rotation

Lesson Title -- Programming a crop of mums
Lesson objectives -- Flower a crop of mums for a holiday
-- Space pot mums on a bench

Lesson Title -- Planning for a year-round rotation
Lesson objectives -- Calculate how many mums can be grown in a greenhouse pot plant section
-- Prepare a year-round pot mum rotation

Problem Area -- Receiving and Potting Chrysanthemums

Lesson Title -- Receiving and preparing for potting
Lesson objectives -- Identify cultivars in the shipping container and store cuttings
-- Evaluate soil mediums for potting

Lesson Title -- Potting and labeling cuttings
Lesson objectives -- Pot chrysanthemums
-- Label chrysanthemums

Problem Area -- Watering Potted Chrysanthemums

Lesson Title -- Describing pot mums' need for water and identifying watering problems
Lesson objectives -- Describe the pot mums' need for water
-- Identify symptoms of under-watered and over-watered plants

Lesson Title -- Identifying mums that need and applying water to pot mums
Lesson objectives -- Identify pot mums that need watered
-- Demonstrate good hand watering techniques
-- Connect and use automatic watering devices

Problem Area -- Fertilizing Potted Chrysanthemums

Lesson Title -- Formulating a fertility plan and correcting fertility problems
Lesson objectives -- Plan a fertilizer program for growing pot mums
-- Recognize fertility problems and recommend corrective procedures

Lesson Title -- Mixing and applying fertilizers and using the Solu Bridge
Lesson objectives -- Mix and apply fertilizer to potted chrysanthemums
-- Conduct a Solu Bridge test and recommend a follow-up procedure

Problem Area -- Controlling Temperature and Regulating Growth

Lesson Title -- Controlling temperature
Lesson objectives -- Plan for control of temperature
-- Set the greenhouse controls for temperature requirements

Lesson Title -- Regulating growth
Lesson objectives -- Identify cultivars that require the use of growth retardants
-- Identify the right stage of growth for treatment
-- Treat the crop with growth retardant

Problem Area -- Pinching and Disbudding

Lesson Title -- Pinching pot mums
Lesson objectives -- List the effects of pinching on the chrysanthemum plants
-- Identify the correct stage of growth for pinching
-- Pinch mum plants

Lesson Title -- Disbudding pot mums
Lesson objectives -- List the effects of disbudding on the chrysanthemum plants
-- Identify the correct stage of bud development to remove buds
-- Remove buds on chrysanthemums

Problem Area -- Controlling Insects

Lesson Title -- Identifying insect pests and planning a control program
Lesson objectives -- Prepare a list of the common pests which attack chrysanthemums and outline cultural and chemical controls
-- Identify common insect pests

Lesson Title -- Safely applying insecticides

Lesson objectives -- Select a good insecticide and an application method
-- Safely prepare or mix the insecticide for application
-- Safely apply insecticide

Problem Area -- Preventing and Treating Chrysanthemum Diseases

Lesson Title -- Identifying chrysanthemum diseases and planning a control program
Lesson objectives -- Prepare a list of common diseases which attack chrysanthemums and outline cultural and chemical controls
-- Identify common diseases of chrysanthemums

Lesson Title -- Safely applying fungicides
Lesson objectives -- Select a good fungicide and an application method
-- Safely prepare or mix the fungicide for application
-- Safely apply the fungicide

Problem Area -- Marketing Potted Chrysanthemums

Lesson Title -- Identifying market stage and quality
Lesson objectives -- Identify the proper stage of development for market
-- Grade mums for quality and for pricing

Lesson Title -- Preparing for market and calculating income
Lesson objectives -- Prepare mums for wholesale delivery
-- Prepare mums for sale in the retail shop
-- Calculate labor income for the crop produced

Unit Evaluation --

Students will be evaluated during the unit of instruction (formative evaluation) and following the completion of the unit (summative evaluation).

A. Students will be evaluated daily in the practicum by using the following scale:

4 - completed task without supervision; can supervise others in performing tasks.

3 - completed task without supervision; however needs additional practice to improve efficiency.

2 - completed task with minimum supervision; needs additional practice.

1 - completed task with much supervisory help.

0 - did not complete the task. 100 points

This evaluation will be recorded in the Record Book of Practicum Skills.

B. Quizzes will be given covering the classroom and laboratory experiences approximately once a week. 50 points

C. Record keeping during the production of the potted chrysanthemums will be evaluated four times. 50 points

D. Unit examination will be given at the conclusion of the unit (multiple choice questions). 50 points

E. The potted chrysanthemums will be judged by a local grower and the evaluation recorded. 50 points

Total Possible 300 points

Section II

Agricultural Processing - Meats

Biological Farming

Daily Personal Skills

Farm Law

COURSE Agribusiness

UNIT Ag Processing

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline career opportunities in the field of Agricultural Processing.

2. Identify and describe methods of grading raw agricultural commodities.

3. Understand the difference in prices between raw commodities and finished products.

INTRODUCTION/SITUATION

Processing is an important step in converting raw agricultural products into a usable finished product that the consumer can purchase. Processing is also becoming an ever larger part of the employment sector in agriculture and related agribusinesses. This unit is meant to provide an overview of agricultural processing to junior and senior level students in a period of approximately fifteen teaching days, or whatever is most appropriate.

UNIT SEQUENCE

PROBLEM AREA Processing and Grading Raw Meats

Lesson Title Processing Raw Meats

Lesson Objectives

1) Explain the process of slaughtering for each of the four major kinds of meat.

2) Describe local and federal government regulations dealing with slaughter, preparation, and packaging of meat.

Lesson Title Identifying Retail Cuts of Meat

Lesson Objectives

1) Identify wholesale cuts of pork, lamb, beef, and poultry.

2) Identify retail cuts of pork, lamb, beef, and poultry.

PROBLEM AREA Processing and Grading Plant Commodities

Lesson Title Processing Grains/Feedstuffs

Lesson Objectives

1) Explain the processing of different grains for human and animal consumption.

2) Describe local and federal government regulations dealing with the processing, treating, and storage of grains.

Lesson Title — Identifying Grades of Grains/ Feedstuffs

Lesson Objectives
1) Identify various grades of grains and feedstuffs.
2) Explain the major uses of each of the grades.

PROBLEM AREA — Marketing Raw Agricultural Products

Lesson Title — Determining Grades of Plant Commodities

Lesson Objectives
1) Explain the qualifications of each grade.
2) Calculate the grade of the raw product using various determining factors.

Lesson Title — Determining Grades of Animal Commodities

Lesson Objectives
1) Explain the qualifications of each grade.
2) Calculate the grade of the raw product using various determining factors.

PROBLEM AREA — Pricing Agricultural Products

Lesson Title — Increasing Values of Agricultural Commodities

Lesson Objectives
1) Explain the increased value associated with processing agricultural products.
2) Determine the net effects of processing raw products.

PROBLEM AREA — Careers in Agricultural Processing

Lesson Title — Career Exploration

Lesson Objectives
1) Identify a career in the agricultural processing industry that they are interested in exploring.
2) Outline the requirements necessary for an entry-level position in this area.
3) Explain the requirements of the position.

UNIT EVALUATION

	VALUES
Daily assignments (2 pts each x 15)	30
Quizzes (20 pts each x 2)	40
Unit Test	30
TOTAL POINTS	100

Course - Advanced Crop Production

Unit Title - Biological Farming

Unit Objectives-

Expose junior/senior students to the concept of non-chemical farming.

Compare profit potential of biological farming with more conventional farming methods.

Situation -

It is apparent that we need to expose students to an alternative method of farming, keeping in mind profitability, ground water quality, and soil conservation.

Problem Area - Set Up and Calculate Comparative Budgets

Lesson Objectives - Identify and compare the inputs and profits of each farming method.

Problem Area - Conduct a Field Trip to a Biological Farm

Lesson Objectives - Allow students to see the processes and sciences of biological farming.

Problem Area - Effect of Biological Farming on Ground Water Quality

Lesson Objectives - Define present ground water contamination through chemical farming (including pesticides, herbicides, and fertilizers).
- Survey other methods of pest control.

Problem Area - Effects on Soil Conservation

Lesson Objectives - List and compare chemical and biological farming methods as they affect soil conservation.
- Identify the use of crop rotation.

Evaluation -

Quizzes will be given covering classroom discussion and budgetary worksheets.

A unit examination will be given at unit completion.

COURSE Life Skills

UNIT Daily Personal Skills

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Identify proper behavior and action in daily life situations.

2. Demonstrate proper communication and personal skills.

3. Evaluate one's self and set goals for self-improvement.

INTRODUCTION/SITUATION

Life demands certain personal skills and etiquette for more success. This unit will be taught to sophomore students over a two week period of time.

UNIT SEQUENCE

PROBLEM AREA Using Conversation

Lesson Title Introducing People

Lesson Objectives

1) Identify the sequence and method of introducing people.

2) Outline a plan to remember names and faces of people.

Lesson Title Using the Telephone

Lesson Objectives

1) Demonstrate proper techniques of answering the phone correctly.

2) List the information required for taking phone messages.

3) Properly demonstrate the skill to take or place an order.

PROBLEM AREA Appropriate Table Manners

Lesson Title Arranging Table Settings

Lesson Objectives

1) Set a formal table using the appropriate materials.

2) Set an informal or everyday table using the appropriate materials.

Lesson Title Using Proper Table Manners

Lesson Objectives

1) Use utensils correctly and politely.

2) Outline proper etiquette at the table.

PROBLEM AREA Personal Courtesies

Lesson Title Using Personal Courtesies

Lesson Objectives

1) List common courtesies involved in everyday life.

2) List courtesies that may be used on special occasions.

3) List courtesies that are involved while around adults and peers.

PROBLEM AREA — Parent-Child Relationships

Lesson Title — Developing Communication Skills

Lesson Objectives

1) Identify proper or needed communication skills in themselves and others.

Lesson Title — Developing Ability to Communicate Problems

Lesson Objectives

1) Demonstrate the ability to open lines of communication between themselves and others.

2) Construct a parent-student relation contract.

UNIT EVALUATION

	VALUES
Daily Participation (2 pts per day)	20
Quiz	10
Role Playing Exercises (2 @ 20 pts. each)	40
Unit Test	30
TOTAL POINTS	100

Unit of Instruction

Course -- Vocational Agriculture III

Unit -- Using Farm Law

Unit Objectives --

The student will be able to explain six major areas of Farm Law.

Given a situation statement from any of the unit's seven problem areas, the student will be able to write one solution to the problem.

Given the unit of instruction, the student will be able to score 80% or higher or an examination on Using Farm Law.

Introduction/Situation --

Businesses (agricultural and nonagricultural), farming, community leaders, and responsible citizens all require a basic knowledge of law. Using Farm Law is an introductory unit being taught to eleventh and twelfth grade students for 135 minutes per week for seven weeks. The unit is designed to cover topics as they relate to Farm and Agribusiness, but are applicable to other business and everyday living. This unit will give students exposure to Wills and Estate Planning, Forming Contracts and Partnerships, Farmer's Liability, and Motor Vehicle Laws all of which are areas the students will be making decisions in during his/her lifetime.

Sequencing the Unit

Problem Area -- Identifying the three main types of law

Lesson Title -- Describing a community without laws
Lesson objectives -- List five laws that would help this community
-- State one way to enforce the new laws

Lesson Title -- Defining Common law
Lesson objectives -- List two examples of common law

Lesson Title -- Defining Statutory law
Lesson objectives -- Explain the three main levels of the courts

Problem Area -- Wills and Estate Planning

Lesson Title -- Stating the purpose of a Will
Lesson objectives -- List three advantages for writing Wills
-- List three problems arising from not having a Will

Lesson Title -- Explaining Taxation on Wills and Estates
Lesson objectives -- Compare inheritance and gift taxes
-- Contrast state and federal taxation

Lesson Title -- Identifying conditions of Wills
Lesson objectives -- Prepare Oral and Written Wills
-- Critique a Will

Problem Area -- Describing Contracts

Lesson Title -- Constructing a contract
Lesson objectives -- List components of a contract
-- Write a contract

Lesson Title -- Breaking a contract
Lesson objectives -- Describe results of breaking a contract

Lesson Title -- Forming contracts with minors
Lesson objectives -- Explain a binding contract

Problem Area -- Forming a Partnership

Lesson Title -- List rights and obligations of partners
Lesson objectives -- Design an agreement for a partnership

Lesson Title -- Identifying ways to terminate partnerships
Lesson objective -- Dissolve a partnership

Problem Area -- Identifying the Farmer's Liability

Lesson Title -- Describing liable situations on the farm
Lesson objectives -- Identify negligence

Lesson Title -- Identifying Insurance Protection needs
Lesson objectives -- Describe basic policy
-- List three types of damages covered by insurance
-- List two types of added protection attached to basic policies

Problem Area -- Identifying Farmers Water Rights

Lesson Title -- Differentiating between the types of Water Rights
Lesson objectives -- Explain ownership of a stream
-- Describe right of water use (riparian rights)

Lesson Title -- Stating rights on lakes and ponds
Lesson objective -- Contrast between streams and lake rights

Problem Area -- Identifying Motor Vehicle Laws relating to farming

Lesson Title -- Defining Registration Code for farm vehicles
Lesson objective -- List farm vehicles which need to be registered

Lesson Title -- Defining Oversized Equipment Regulations
Lesson objectives -- Describe procedure for transporting oversized farm equipment on highways

Unit Evaluation --

Students will be evaluated during the unit of instruction and at the completion of the unit.

A. Daily attitude and conduct will be evaluated by using the following scale:
   3 - positive attitude, attentive, follows instructions
   2 - occasional daydreaming, mild disruptions
   1 - poor attitude, frequently disrupts class
   0 - absent, extremely disruptive

   54 points

B. Students will solve real-life problems for each lesson having a maximum value of 10 points. 180 points

C. Ten point quizzes will be given each week on topics covered during that week. 70 points

D. At the completion of the unit a unit examination will be given. 50 points

Total 354 points

Section III

Tomato Production

Strawberry Production

Sweet Corn Production

Lawn Care

Pasture Management

Corn Production

COURSE Horticulture

UNIT Fresh Tomato Production

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the management practices required to grow a profitable crop of fresh tomatoes.

2. Set production goals for a typical fresh tomato production situation.

3. Identify and perform the various marketing alternatives for efficient fresh tomato production.

4. Identify job and career opportunities in fresh tomato production.

INTRODUCTION/SITUATION

The seasonal production of high quality, fresh vegetables which are in high demand is a basic need of local communities. This need can best be fulfilled by local agriculture students who undertake a well-planned and well-managed program of fresh tomato production. This unit is practical for any year of high school and any phase of plant production, but should be taught in the spring semester well in advance of any anticipated planting activity. This unit is planned to last ten teaching days, or whatever is most appropriate to the situation.

UNIT SEQUENCE

PROBLEM AREA Planning Tomato Production

Lesson Title Constructing a Budget

Lesson Objectives

1) Identify the anticipated expenses for a particular fresh tomato production enterprise.
2) Identify the expected income potential from this enterprise.
3) Prepare a budget for the tomato production enterprise.

Lesson Title Planning Tomato Production Systems

Lesson Objectives

1) Identify the various production systems best utilized for your local growing conditions.
2) Select and describe the most appropriate production system for their operation.

Lesson Title Selecting Varieties of Tomatoes

Lesson Objectives

1) Identify varieties best adapted for local growing conditions.
2) Compare advantages and disadvantages of each variety related to earliness, bearing habits, disease and pest resistance.

Lesson Title Ordering Tomato Seeds/Purchasing Transplants

Lesson Objectives
1) Identify reputable and reliable producers and wholesalers of fresh tomato seeds and transplants.
2) Calculate the number of tomato plants needed for their enterprise.

PROBLEM AREA Site and Soil Preparation
Lesson Title Bed Preparation

Lesson Objectives
1) Identify characteristics of site and soil that are most preferred for successful tomato production.
2) Compare the advantages and disadvantages of different types of bed preparation.
3) Select the appropriate equipment to use in bed preparation.

Lesson Title Planting Tomatoes

Lesson Objectives
1) Determine the appropriate spacings between plants and between rows.
2) Determine the most suitable planting times utilizing the calculations with growing degree days.
3) Perform correct planting or transplanting techniques.

PROBLEM AREA Management of Fresh Tomatoes
Lesson Title Fertilizing Tomatoes

Lesson Objectives
1) Outline the nutrient requirements for tomatoes.
2) Obtain soil and tissue samples.
3) Calculate fertilizer needs based upon results of the soil and tissue analysis.

Lesson Title Irrigating Tomatoes

Lesson Objectives
1) Compare the advantages and disadvantages of several different techniques of watering strawberries.

Lesson Title Controlling Pests and Diseases

Lesson Objectives
1) Identify common insect pests of tomatoes.
2) Identify common diseases of tomatoes.
3) Identify common weeds of local growing area.
4) Outline a control program for pests and diseases of tomatoes.

Lesson Title Applying Chemicals

Lesson Objectives

1) Select the appropriate chemicals for the specific job.

2) Identify the proper procedures for handling, applying, and storing the chemicals.

PROBLEM AREA Harvesting and Marketing Fresh Tomatoes

Lesson Title Harvesting Fresh Tomatoes

Lesson Objectives

1) Outline the appropriate procedures for harvesting the tomato crop.

2) Determine the optimum time for harvesting tomatoes.

Lesson Title Marketing Tomatoes

Lesson Objectives

1) Describe the different schemes for marketing tomatoes for the local growing area.

2) Identify the marketing strategy that he/she will use for their crop.

UNIT EVALUATION

	VALUES
Daily assignments (2 points x 10)	20
Quizes (10 points x 2)	20
Worksheets (10 points x 2)	20
Unit Test	40
TOTAL POINTS	100

COURSE Horticulture

UNIT Strawberry Production

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the management practices required for strawberry production.

2. Establish realistic and practical goals for strawberry production.

3. Develop outlets for marketing strawberries.

4. Identify job and career opportunities in strawberry production.

INTRODUCTION/SITUATION

The seasonal production of high quality, fresh fruit which is in high demand in local communities is a basic need of local communities. This need can best be fulfilled by local agriculture students who undertake a well-planned and well-managed program of strawberry production. This unit is practical for any year of high school and any phase of plant production, but should be taught in the spring semester well in advance of any anticipated planting activity. This unit is planned to last for five teaching days, or whatever is most appropriate to the situation.

UNIT SEQUENCE

PROBLEM AREA — Planning Strawberry Production

Lesson Title — Constructing a Budget

Lesson Objectives

1) Identify the anticipated expenses for a particular strawberry production enterprise.
2) Identify the expected income potential from this enterprise.
3) Prepare a budget for the strawberry production enterprise.

Lesson Title — Selecting a System of Production

Lesson Objectives

1) Identify the various production systems best utilized for your local growing conditions.
2) Select and describe the most appropriate production system for their operation.

Lesson Title — Selecting Strawberry Varieties

Lesson Objectives

1) Identify varieties best adapted for local growing conditions.
2) Compare advantages and disadvantages of each variety related to bearing, disease and pest resistance.

Lesson Title Ordering Strawberry Plants/Supplies

Lesson Objectives

1) Identify reputable and reliable producers and wholesalers of strawberry transplants.

2) Calculate the number of strawberry plants needed for their enterprise.

PROBLEM AREA Site and Soil Preparation

Lesson Title Bed Preparation

Lesson Objectives

1) Identify characteristics of site and soil that are most preferred for successful strawberry production.

2) Compare the advantages and disadvantages of different types of bed preparation.

3) Select the appropriate equipment to use in bed preparation.

Lesson Title Planting Strawberries

Lesson Objectives

1) Determine the appropriate spacings between plants and between rows.

2) Determine the proper planting times.

3) Perform correct transplanting techniques.

PROBLEM AREA Management of Strawberries

Lesson Title Fertilizing Strawberries

Lesson Objectives

1) Outline the nutrient requirements for strawberries.

2) Obtain soil and tissue samples.

3) Calculate fertilizer needs based upon results of the soil and tissue analysis.

Lesson Title Irrigating Strawberries

Lesson Objectives

1) Compare the advantages and disadvantages of several different techniques of watering strawberries.

Lesson Title Controlling Pests and Diseases

Lesson Objectives

1) Identify common insect pests of strawberries.

2) Identify common diseases of strawberries.

3) Identify common weeds of local growing area.

4) Outline a control program for pests and diseases of strawberries.

Lesson Title Applying Chemicals

Lesson Objectives

1) Select the appropriate chemicals for the specific job.

2) Identify the proper procedures for handling, applying, and storing the chemicals.

PROBLEM AREA Harvesting and Marketing Strawberries

Lesson Title Harvesting Strawberries

Lesson Objectives

1) Outline the appropriate procedures for harvesting the strawberry crop.

2) Determine the optimum time for harvesting strawberries.

Lesson Title Marketing Strawberries

Lesson Objectives

1) Describe different schemes for marketing strawberries for the local growing area.

2) Discuss the advantages and disadvantages of a U-Pick operation.

UNIT EVALUATION

	VALUES
Daily assignments (5 points x 5)	25
Quizzes (20 points x 2)	40
Worksheets (7 points x 5)	35
Unit Test	50
TOTAL POINTS	100

Course: Vegetable Production

Unit Title: Sweet Corn Production

Unit Objectives:

1. List the advantages of producing sweet corn in Iowa.
2. Analyze and discuss the common cultural practices and planting methods associated with sweet corn production.
3. Develop a plan for implementing sweet corn production on the family farm or school lan.. laboratory.

Situation:

The production of diversified agricultural products has an ever increasing role in Iowa. The sophomore students will study sweet corn production over a week period.

Problem Area - Planning for Sweet Corn Production

Lesson Objectives
- Outline plant life cycle.
- List possible careers in sweet corn production.
- Identify inputs and costs.
- Identify outputs and costs.
- Identify high risk potential.
- Computer operation (spreadsheet).

Problem Area - Site Selection

Lesson Objectives
- Identify proper climate.
- Identify proper soils.

Problem Area - Fertilization

Lesson Objectives
- Proper soil sampling.
- Fertilizer application.
- Fertilizer identification.
- Soil Analysis.

Problem Area - Plant Establishment

Lesson Objectives
- Identify proper soil preparation.
- Selection of proper seed variety.
- Identify proper plant spacing and population.
- Identify proper planter calibration.
- Identify proper seed placement.
- Identify proper planting date.

Problem Area - Trouble-Shooting : Germination - Tassling

Lesson Objectives - Identify possible weed problems and chemical and mechanical controls.
- Identify insect problems and chemical and mechanical controls.
- Identify nutrient deficiency.
- Identify proper sprayer calibration.
- Identify possible soil difficulties.

Problem Area - The Hoarvesting of Sweet Corn

Lesson Objectives - List the stages of sweet corn development.
- Describe the time at which sweet corn should be harvested.
- Identify and describe the two methods of sweet corn harvesting.

Problem Area - The Storage of Sweet Corn

Lesson Objectives - Describe the temperature to store sweet corn for maintaining sweetness.
- List storage procedures.
- Name equipment needed to successfully store sweet corn.

Problem Area - Marketing Opportunities for Sweet Corn

Lesson Objectives - List advantages and disadvantages to wholesale marketing.
- List advantages and disadvantages to direct-to-consumer marketing.
- List advantages and disadvantages to pick-your-own marketing.
- Describe the importance of market outlets in Iowa.
- Outline a sweet corn marketing strategy.

Problem Area - Pest Control for Sweet Corn

Lesson Objectives - List the major diseases.
- Identify disease symptoms.
- Describe disease control methods.
- Define the term "virus".
- Define virus control methods.
- List the different types of nematodes that damage sweet corn in Iowa.
- Describe nematode control methods.
- List the major insect control methods.

Course - Horticulture

Unit Title - Lawn Care

Unit Objectives -

Outline management practices for a home lawn.

Identify weeds and diseases of lawns, and their control.

Situation -

Almost everyone has a lawn which they take pride of, but they do not know proper care methods. This unit will identify these care methods.

Problem Area - Establishment of a Lawn

Lesson Objectives - Measure the area of a lawn.
- Identify steps of site preparation.
- Select a proper lawn mixture.
- Describe correct methods of care for a new lawn.

Problem Area - Proper Lawn Fertility

Lesson Objectives - Identify steps in and use of soil sampling.
- Calculate fertilizer requirements.

Problem Area - Lawn Weed and Disease Management

Lesson Objectives - Identify common weeds and methods of control.
- Identify common diseases and methods of control.
- Prepare a disease and weed management schedule for a lawn in the local area.

Problem Area - Proper Lawn Mowing

Evaluation -

- worksheet scores
- soil sampling
- sharpening mower blade

Course - Crop Production

Unit Title - Pasture Management

Unit Objectives -

Identify types of grasses.

Calculate nutritional value of grasses.

Outline a system for maximum production, preparation, and seeding of pasture and reserve land.

Situation -

A lot of land is going into the 10 year reserve program and there is a need for the improvement of permanent pasture. This unit is designed to last one week and will be taught the sophomore year.

Problem Area - Introduction of Grass Identification

Lesson Objectives - Identify the native and introduced grasses.
- Identify seeds of grasses.
- Identify major legume plants for pasture.

Problem Area - Figuring Cost and Returns of Reserve Program

Lesson Objectives - List steps in taking soil samples, and demonstrate the method.
- Calculate seed costs.
- Calculate fertilizer and lime costs.
- Figure a budget.

Problem Area - Pasture Management

Lesson Objectives - Calculate nutritional value of pasture.
- Select types of pasture mixture to use.
- Fertilize for profitable production.
- Develop a rotational grazing system.
- Calculate animal unit days for a pasture.

Problem Area - Seeding Pasture and Reserve Acreage

Lesson Objectives - Compare different seeding methods.
- Calculate and identify seeding rate and depth.
- Plan a weed control program.

Evaluation -

10	Identification of grasses
10	Identification of legumes
20	Take a soil sample and complete information sheet
10	Calculate seed costs per acre
10	Calculate fertilizer and lime costs per acre
20	Figure a budget for reserve program
10	Discuss tillage systems for seeding
10	Determine animal unit days
100	Total Points

Course - Crop Production

Unit - Corn Production

Unit Objectives -

Outline the management practices required to grow a profitable crop of corn.

Set production goals given a typical corn production situation in Iowa.

Calculate efficiency factors given a typical corn production situation in Iowa.

Introduction/Situation -

The production of a high quality high yielding corn crop is a major goal in this community. The sophomore students will study this unit over a 5 week period. A follow-up unit will be introduced in the junior or senior year emphasizing specific management problems.

Unit the Sequence -

Problem Area - Planning for the production of corn

Lesson Title - Outline management practices to grow corn
Lesson objectives - Identify the production inputs
- Calculate the acres to be planted
- Measure an acre of land

Lesson Title - Construct a budget
Lesson objectives - Identify the expected expenses for a given corn crop
- Identify the expected income potential for a given corn crop
- Explain the profit potential for a given corn crop

Problem Area - Outline a soil fertility program

Lesson Title - Identify plant nutrient requirements
Lesson objectives - Obtain soil samples
- Test soils
- Calculate fertilizer required
- Calculate the cost of fertilizer and lime

Lesson Title - Identify the primary, secondary and micro-nutrient requirements
Lesson objectives - Explain the procedures for fertilizer application
- Calibrate equipment for fertilizer application

Problem Area - Select adapted high producing seed

Lesson Title - Identify the proven seed for the area
Lesson objectives - Identify factors to evaluate hybrid seed varieties
- List the advantages and disadvantages of various hybrids in area

Lesson Title - Calculating seed corn needs
Lesson objectives - Calculate the total pounds of seed required
- Calculate the cost of seed required

Problem Area - Controlling pests - weeds, insects, disesases

Lesson Title - Outline a control program for corn pests
Lesson objectives - Identify common insect pests of corn
- Identify common weeds of corn
- Identify common diseases of corn

Lesson Title - Applying pesticides
Lesson objectives - Selecting proper pesticides
- Outline a corn pesticide usage program
- Identify safe handling procedures
- List application rates and costs of materials
- Calculate the pesticide expenses per acre for given situations

Problem Area - Preparing the seedbed

Lesson Title - Outline the tillage procedures to be used
Lesson objectives - Identify the various tillage methods
- List advantages and disadvantages of each tillage method
- Select the best tillage method for a given situation

Lesson Title - Calculate the costs of tillage per acre
Lesson objectives - Explain the various tillage expenses
- Calculate and compare the costs of various tillage methods in a given situation

Problem Area - Planting the corn crop

Lesson Title - Calibrating and adjusting the corn planter
Lesson objectives - Selecting the proper plant population for the situation
- Setting the corn planter for proper placement of fertilizer, pesticides and seed

Lesson Title - Selecting the ideal planting time
Lesson objectives - Outline a planting strategy
- List the expenses of planting
- Calculate the costs per acre of planting

Problem Area - Conducting corn yield checks

Lesson Title - Outline a corn yield check procedure
Lesson objectives - Calculate acreage of a given situation
- List procedures for checking harvest losses

Lesson Title - Calculate corn yields
Lesson objectives - Calculate yield per acre and plant population
- Calculate test weight, moisture percent, and foreign matter
- Explain effect of change in test weight, etc. on profit potential

Problem Area - Harvesting corn

Lesson Title - Outline a profitable corn harvest procedure
Lesson objectives - Properly set and adjust harvesting equipment
- Select the most optimum harvest time

Lesson Title - Calculate harvest expenses
Lesson objectives - List the expenses of harvest
- Calculate costs per acre

Problem Area - Storing corn

Lesson Title - Outline a profitable corn storage system
Lesson objectives - Identify the different storage systems
- Compare and contrast the different storage systems

Lesson Title - Calculate the corn storage expenses
Lesson objectives - List the expenses of storing corn
- Calculate the cost per bushel of stored corn

Problem Area - Marketing corn

Lesson Title - Outline a profitable corn marketing system
Lesson objectives - Explain forward contracting, hedging, direct marketing
- Compare and contrast marketing of grain to marketing corn through livestock

Lesson Title - Calculating market expenses
Lesson objectives - List the expenses of marketing corn in several ways
- Calculate cost per bushel for marketing corn in various systems
- Explain the profit potential in marketing grain

Problem Area - Calculating returns to investment

Lesson Title - Calculate the gross returns per acre of corn produced
Lesson objectives - List the known costs per acre
- Calculate the net returns per acre

Problem Area - Analyzing the enterprise

Lesson Title - Comparing actual costs and returns to projected budget
Lesson objectives - Calculate efficiency levels attained
- Compare current results with past years

Lesson Title - Planning next year's crop
Lesson objectives - Setting goals for corn production

Unit Evaluation -

Students will be evaluated during the unit (formative evaluation) and following the completion of the unit (summative evaluation) as follows:

A. Students will be evaluated daily by using the following scale:

Pts.

4 - self-directed, active participation; completion of task at high level without supervision

3 - participated frequently; completed task without supervision but needs practice

2 - participated occasionally; minimum supervision, but needs practice

1 - seldom participated; completed task with much supervision

0 - no participation; did not complete even a portion of task

(4 x 25 days)= 100

B. Quizzes will be given covering the classroom & laboratory experiences once a week (20 pts. x 5 wks.)= 100

C. Worksheets will be completed for each problem area (12 x 20 pts. ea.)= 240

D. Unit examination will be completed at the end of the unit 100

E. Laboratory work/machinery calibration 60

TOTAL PTS. 600

Section IV

Chain Saw Safety

Arc Welding

Farm Wells

Water Quality

Plumbing

LP Gas

COURSE Forestry or Woodlot Management

UNIT Chain Saw Safety

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Demonstrate proper methods of sharpening chainsaws.

2. Identify and correct possible safety hazards before each chainsaw use.

3. Demonstrate correct use of chainsaws while cutting.

INTRODUCTION/SITUATION

In forestry production it is sometimes necessary to eliminate stands or portions of stands of trees for various reasons. The junior students will study this unit over a five day period.

UNIT SEQUENCE

PROBLEM AREA Chainsaw Safety
Lesson Title Safety While Cutting

Lesson Objectives
1) Demonstrate several different methods of using the proper cutting procedures.
2) Identify possible safety hazards and how to avoid accidents.

Lesson Title Cutting With a Chainsaw
1) Demonstrate proper cutting procedures while performing different cuts with a chainsaw.

Lesson Title Sharpening the Chainsaw

Lesson Objectives
1) Demonstrate the proper method of sharpening a chain using appropriate safety techniques.

Lesson Title Care and Storage of Chainsaws

Lesson Objectives
1) Demonstrate the proper maintenance of saws.
2) Demonstrate the correct storage of saws.

UNIT EVALUATION

	VALUES
Quizzes (2 @ 20 pts each)	40
Demonstrations (2 @ 20 pts each)	40
Unit Test	20
TOTAL POINTS	100

Course -- Agriculture Mechanics

Unit -- Arc Welding

Unit Objectives --

Given the unit of instruction, the student will recognize the 14 basic requirements for a welding procedure to the satisfaction of the instructor.

Given the unit instruction, the student will perform all arc welding methods presented and score 80 or better on evaluation.

Introduction/Situation --

This unit will be taught as a beginning unit to tenth grade students. The unit will take approximately ten weeks of laboratory class time to complete. Students will apply arc welding skills obtained to construct their junior year mechanics project. This project will be on display at the local fair. The immediate area contains many metal shops that serve as SOE centers which require knowledge of approved practices in arc welding. Also students can apply arc welding skills on their own farm shop.

Problem Areas -- Recognizing the basic principles involved in arc welding.

Lesson Title -- Identifying the welding process

Lesson Objectives -- Differentiate between "freezing and "fushion" of metals
-- List the basic principles involved in welding
-- Conduct the experiment of welding two ice cubes

Lesson Title -- Arc welding equipment indentification

Lesson Objectives -- Name the four common arc welding machines
-- List parts of A.C. and D.C. arc welders
-- Distinguish between the two most common welding machines (A.C. & D.C.)
-- Match electrode number with specific type of welding to be done

Lesson Title -- Applying safety practices when operating arc welding equipment

Lesson Objectives -- Select proper clothing and eye protection when arc welding
-- Identify the voltage carried through circurt
-- Select proper cable size as related to load carrying compacity
-- Identify proper insulation
-- Locate any loose connections
-- Identify safe use of chip hammer and brush

Problem Area -- Stricking an arc

Lesson Title -- Stricking and holding an arc with A.C. welder

Lesson Objective -- Select proper amperage for ¼" mild steel
-- Identify beads that were run correctly and those run incorrectly
-- Start and run 6031 bead ¼" wide on ¼" mild steel to the satisfaction of instructor
-- Score 80 or better on evaluation

Problem Area -- Running a bead on flat mild steel

Lesson Title -- Establishing a correct 6013 bead with A.C. welder

Lesson Objective -- Select proper amperage for ¼" mild steel
-- Identify beads that were run correctly and those run incorectly
-- Start and run 6013 bead ¼" wide on ¼" mild steel to the satisfaction of instructor
-- Score 80 or better on evaluation

Lesson Title -- Establishing a correct 6011 bead with use of A.C. welder

Lesson Objective -- Establishing five correctly run 6011 bead on flat mild steel
-- Identify and list tensile strength and welding positions of 6011 electrode
-- Score 80 or better on evaluation

Problem Area -- Fillet welds

Lesson Title -- Establishing a "L" fillet weld with 6011 electrode

Lesson Objective -- Deposit 6011 fillet weld with weaving motion using two ½" mild steel
-- Establish weld so no undercutting occurs
-- Score 80 or better on evaluation

Lesson Title -- Establishing a "T" fillet weld with 6011 electrode

Lesson Objective -- Deposit 6011 "T" fillet weld at 45 degree angle with two pieces of ½" mild steel
-- Establish second and third passes with circular motion to satisfaction of instructor
-- Prevent undercutting of metal
-- Hand in for evaluation and score 80 or better on evaluation

Problem Area -- Establishing butt welds

Lesson Title -- Establishing 6011 butt weld in flat position

Lesson Objective -- Identify methods used to prepare metals for butt welds with 6011 electrode
-- Prepare metals on Grinder for butt weld
-- Select proper amperage for each pass of electrode for weld reinforcement
-- Hand in weld for evaluation and score 80 or better

Lesson Title -- Establishing 6011 butt weld in incline position

Lesson Objective -- List procedures to observe when welding in incline position
-- Produce 6011 butt weld with two ⅛" mild steel at 45 degrees
-- Produce 6011 butt weld with two ⅛" mild steel at 60 degrees
-- Hand in 45 and 60 degree weld for evaluation and score 80 or better.

Unit Evaluation --

Students will be evaluated during the unit of instruction (formative evaluation) and following the completion of the unit (summative)

A. Students will be evaluated daily in practicum using the following evaluation:

WELDING GRADE CARD

Name_____

Date_____

Exercise_____

Items	Possible	Score
1. General Apperance	10	
2. Penetration	10	
3. Uniformity	10	
4. Start	10	
5. Stop	10	
6. Height	10	
7. Width	10	
8. Follow direction	10	
Total	100	Possible 100

Comments

_____

_____

B. Quizes will be given on safety and identification prior to actual welding. Possible 100

C. Final examination will include both written evaluation and performing 10 different skills in arc welding. Possible 100

Total Possible 300

Course - Farmstead Planning and Operation

Unit Title - Farm Wells and Water Quality

Unit Objectives -

Student will survey water system problems.

Student will outline components of a farm water system.

Calculate water needs and consumption.

List ways by which water becomes contaminated, and identify how to treat the problem.

Sample water quality.

Situation -

Water quality and farm water systems are deteriorating in this community. This unit will familiarize students with this problem. Time period allowed is three weeks.

Problem Area - Identify Problem Water Systems

Lesson Objectives - Survey water system problems.
- Identify need for quality water and water systems.

Problem Area - Hydro Geology

Lesson Objectives - Identify parts of the hydro cycle.
- Identify aquifers in our area.
- Define ground water and surface water.

Problem Area - Water Contaminants

Lesson Objectives - List various water contaminants.
- List ways to treat these contaminants.

Problem Area - Water Testing

Lesson Objectives - Take water samples.
- Explain and apply a water test report for a given situation.

Problem Area - Calculate Needs

Lesson Objectives - Calculate farm water system needs.
- Calculate home water system needs.

Problem Area - Water System Parts

Lesson Objectives - Identify components of a water system.
- List advantages and disadvantages of different types of componets.

Problem Area - Design Water System for Home Farm

Lesson Objectives - Design a livestock water system.
- Design a home water system.

Problem Area - Professional Services

Lesson Objectives - Identify and describe various resources available to aid in the designing of water systems.

Evaluation -

60	Daily Evaluation	4 @ 15 points each
60	Quizes 1/week	@ 20 points each
50	Worksheets	5 @ 10 points each
60	System design	2 @ 30 points each
60	Unit test	
290	Total points for unit	

Course - Farm Wells and Water (Farmstead Planning ie. Conservation)

Unit Title - Quality Farm Water

Unit Objectives -

Student will: Outline factors necessary for quality farm water.

Identify components of farm water system.

Calculate peak water demand.

Situation -

Quality water is a major concern in northeast Iowa. 83% of Iowans get their water from wells. In 1984, 25% of water samples tested in Iowa City were not fit to drink.

Problem Area - Identify Problem Water Systems

Lesson Objectives - Identify pathogens to man and animals.
- Explain various home water system designs.

Problem Area - Hydro Geology

Lesson Objectives - Identify the major aquafers in northeast and eastern Iowa.

Problem Area - Water Rx

Lesson Objectives - Identify popular primary Rx systems.
- Explain operational characteristics of softeners.

Problem Area - Water System Components

Lesson Objectives - List differences between submersible, jet, and deep well jet pumps.
- Calculate friction loss in plastic, iron, and copper pipe.
- Calculate peak demand by various load stations and home centers.
- Demonstrate correct operation of water pressure systems.

Problem Area - Increasing Water From Existing Wells

Lesson Objectives - Identify advantages and disadvantages of the following systems:
  - surging and backflushing
  - blasting and choronation
  - aciding

Problem Area - Professional Services

Lesson Objectives - Identify the services available from the State Hygenic Lab and State Geological Survey.

Evaluation -

Students will be evaluated at the conclusion of each "Problem Area" via a 10 point quiz. At the conclusion of all problem areas, a comprehensive exam will cover all material presented in the unit.

Course - Vo Ag III

Unit Title - Plumbing

Unit Objectives -

Outline the principles of basic plumbing.

Complete a plumbing project(s).

Calculate cost of a project.

Figure water flow.

Repair and/or replace plumbing fixtures.

Situation -

Everyone has some in their residence. They need to understand how to maintain their plumbing system. One week of instruction time will be used.

Problem Area - Identification of Plumbing Fixtures

Lesson Objectives - Identify 20 plumbing fixtures.
- Identify the materials from which the fixtures are made.

Problem Area - Plumbing Maintenance

Lesson Objectives - Replace faucet washers.
- Demonstrate the proper way to unplug a drain.

Problem Area - Plumbing Project

Lesson Objectives - Measure and calculate materials needed for the project.
- Figure cost of the project.
- Demonstrate proper assembly of plumbing fixtures.
- Demonstrate cutting, assembly and gluing of PVC pipe.

Problem Area - Planning a Sewage Field

Lesson Objectives - Identify absorption rates of different fields.
- Calculate the size of field to use.
- List what would be needed to complete the sewage field.

Evaluation -

20	Quiz on parts identification
10	Quiz on types of materials used in plumbing
20	Grade for the project on replacing faucet washers
10	List the steps to unclog a drain
20	Figure the cost of a project
20	Grade for cutting, assembling, and glueing of PVC pipe
10	Discussion about how a sewage field is to be installed
110	Total points for the unit

Course - Advanced Ag Mech

Unit Title - Liquid Petroleum Gas

Unit Objectives -

Explain properties and use of LP gas, and compare this energy source to competitive energy sources.

List the parts and function of a LP gas system.

Demonstrate how to properly light a LPG furnace, grill.

Situation -

Liquid petroleum gas has become very popular in our community. There has been increased use in recreation and cooking, as well as home use. Students will be taught the basics of a LPG system and the correct procedure of starting a LPG unit. This will be a one week unit taught to juniors and seniors.

Problem Area - Properties of LPG

Lesson Objectives - Identify the characteristics of LPG.

Problem Area - Uses of LPG

Lesson Objectives - List 10 uses of LPG.
- List competitive energy sources.
- Compare cost of LPG to other energy sources.

Problem Area - Parts, and Their Function, of an LPG System

Lesson Objectives - Identify the components of a complete and safe LPG unit.
- Explain the function of the parts.

Problem Area - Starting the LPG Unit

Lesson Objectives - Demonstrate the correct sequence of lighting a LPG unit.
- Demonstrate shut-off and storage of unit.
- Identify LPG safety practices.
- Demonstrate checking for leakage.

Evaluation -

20	Worksheets in problem areas
30	Demonstration of starting technique
50	Written exam
100	Total points for the unit

Section V

Hunting and Hunter Safety

Predator Control and Trapping

Game Bird Production

Beekeeping/Honey Production

Small Animal Pets

Animal Rights in Veal Production

Dairy Production

Beef Production

Course - Wildlife Management

Unit Title - Hunting

Unit Objectives -

Identify hunting as a means of wildlife population control.

Outline safety practices for hunting.

Identify use and maintenance of different types of hunting equipment.

List hunting laws and limits.

Situation -

The practice of safe hunting is a major goal in our community. This unit will be taught to freshmen over a one week period. The class will be taught along with the students recieving their safe hunter license.

Problem Area - Recognizing Population

Lesson Objectives - Identify animals to be hunted.
- State hunting seasons and limits .
- Define conservation control of hunting seasons.

Problem Area - Hunting Regulations

Lesson Objectives - Explain Iowa Hunting Laws.
- List the responsibility of a good sportsman.
- Identify who sets and enforces the law.

Problem Area - Job Opportunities Related to Hunting

Lesson Objectives - List 10 careers related to the hunting industry.

Problem Area - Hunter Safety

Lesson Objectives - Demonstrate safe hunting practices.
- Identify safety features on hunting equipment.

Problem Area - Hunting Equipment and Accessories

Lesson Objectives - Develop a budget for clothing, equipment, accessories, and license.
- List and demonstrate the maintenance practices of hunting equipment and accessories.

Evaluation -

Total points for this unit will be 150.

A. Worksheets will be completed for each problem area:
5 problem areas * 10 points = 50 points

B. Each student will demonstrate one safety practice using gun or bow and arrow: 20 points

C. Written examination will be completed at end of the unit: 80 points

COURSE Animal Science

UNIT Predator Control and Trapping

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Identify important management practices relative to effective methods of small animal pest control.

2. Understand the importance of predator control and trapping as a business.

3. Identify species of predators and fur-bearing animals that are important economic factors in the local community.

4. Recognize and outline the important aspects of predator control and trapping as a productive business enterprise.

5. Identify career opportunities in predator control and trapping.

INTRODUCTION/SITUATION

Students can derive valuable knowledge and skills by being trained in trapping and predator control. This area also has the potential of becoming a profitable enterprise for students in many communities. This unit is intended for freshman students who will study for approximately one week or whatever is appropriate.

UNIT SEQUENCE

PROBLEM AREA Career Exploration

Lesson Title Careers in Trapping and Predator Control

Lesson Objectives

1) Identify a career in trapping and predator control.
2) Outline the requirements for the entry-level position.
3) Explain the requirements and duties for the position.

PROBLEM AREA Identifying Animals

Lesson Title Controlling Predators and Pests

Lesson Objectives

1) Identify common predators and pests
2) Describe the most appropriate methods for trapping and controlling each species of economically important animal.

Lesson Title Trapping Fur-Bearing Animals

Lesson Objectives

1) Identify fur-bearing animals that may be trapped legally.

2) Describe the most appropriate methods for trapping and controlling each species of animal.

PROBLEM AREA Trapping and Controlling Methods
Lesson Title Baiting and Using Chemicals

Lesson Objectives
1) Identify the most effective baits and chemicals to use for a given species of animal.
2) Describe the most effective methods of trapping and controlling different species of animal.

Lesson Title Selecting and Using Traps

Lesson Objectives
1) Identify and describe the various types of commonly used traps.
2) Properly set and place various traps for the selected species of animal.

Lesson Title Placing and Removing Traps

Lesson Objectives
1) Select the most appropriate locale for trap placement.
2) Describe the conditions necessary for locating successful trapping spots.
3) Properly remove a trap upon completion of the task.

PROBLEM AREA Processing and Marketing Products
Lesson Title Processing and Tanning Hides

Lesson Objectives
1) Describe the processes involved to prepare a finished product for the tanner and the consumer.

Lesson Title Marketing Hides and Pelts

Lesson Objectives
1) Describe the processes involved in deriving a marketable product from trapping.

Lesson Title Trapping Economics

Lesson Objectives
1) Develop a budget and cash flow statement for a trapping enterprise.

PROBLEM AREA Trapping Safety
Lesson Title Trapping Safety

Lesson Objectives
1) Gain working knowledge and a practical background in trapping safety.

COURSE Conservation and Natural Resources

UNIT Game Bird Production

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the practices required to successfully manage gamebird populations.

2. Produce wild game birds for release into the habitat.

3. Outline the practices required to successfully produce gamebird habitats.

INTRODUCTION/SITUATION

Maintaining the population and habitat of local gamebirds is very beneficial to the local community for recreation, food, and aesthetic beauty. This unit will be taught to sophomores in approximately seven teaching days and is meant to emphasize the benefits that may be derived by the local commuhity.

UNIT SEQUENCE

PROBLEM AREA Habitat Development
Lesson Title Determining Habitats

Lesson Objectives
1) Identify the local habitat and vegetation required for feed.
2) Identify the local habitat and vegetation required for shelter and cover.

Lesson Title Constructing Habitats

Lesson Objectives
1) Perform the necessary management skills required to establish and maintain vegetative cover and feed.

PROBLEM AREA Producing Game Birds
Lesson Title Game Bird Reproduction

Lesson Objectives
1) Incubate game bird eggs successfully until hatched.
2) Successfully manage young chicks.

Lesson Title Feeding Game Birds

Lesson Objectives
1) Determine the nutritional needs of game birds at various stages of development.
2) Select the proper feeds appropriate for game birds at different stages of development.

PROBLEM AREA Release of Birds
Lesson Title Successful Release Methods

Lesson Objectives

1) Identify and perform release techniques.
2) Explain identification and tagging procedures.

PROBLEM AREA — Maintaining Game Bird Populations
Lesson Title — Estimating Populations

Lesson Objectives

1) Perform population estimation techniques.
2) Estimate carrying capacities of habitats.

PROBLEM AREA — Career and Job Opportunities
Lesson Title — Exploring Job Opportunities

Lesson Objectives

1) Identify entry level positions of their interest.
2) Explain the requirments necessary for meeting the entry level position.

UNIT EVALUATION

	VALUES
Laboratory exercises (5 points per day)	35
Worksheets (for each problem area; 5 x 5 pts. each)	25
Unit Test	40
TOTAL POINTS	100

Course: Specialty Animals

Unit Title: Game Birds

Unit Objectives:

1. Outline management practices required to successfully hatch and raise game birds.
2. Set production goals for successful game bird production.
3. Maintain accurate records and calculate cost of production and efficiencies.

Situation:

Problem Area - Careers

Lesson Objectives - List 10 career opportunities in game birds.
- Write paper on a career.

Problem Area - Legal Implications

Lesson Objectives - List types and cost of licenses.

Problem Area - Economics

Lesson Objectives - Develop a budget including input and output costs
- Develop a cash flow for the enterprise.
- Develop a plan for marketing.

Problem Area - Sources/Supplies

Lesson Objectives - List 3 possible sources of birds.
- List supplies needed to start the enterprise.

Problem Area - Identificatin of Species and Breeds

Lesson Objectives - List and identify the major species of game birds in the area.
- List 5 birds you would like to see in the future.

Problem Area - Health

Lesson Objectives - Name and identify the major diseases and pests and their prevention and control.

Problem Area - Reproduction

Lesson Objectives - Identify the parts of the reproductive tract.
- Know the incubation period for game birds.
- Determine a desireable type of game bird.
- Know the incubation temperature and humidity for game bird eggs.

Problem Area - Wildlife Biology

Lesson Objectives - Describe the food chain and the role of the game bird in it.
- Describe the environment's role on the lifestyle of the game bird.

Problem Area - Nutrition

Lesson Objectives - Identify the parts of the digestive system.
- List requirements of the diet.
- Balance a ration.
- Develop a list of possible feedstuffs.

Problem Area - Housing/Habitat

Lesson Objectives - Describe the basic housing requirements.
- Name possible problems of domesticating wild animals.

Problem Area - Marketing Produts and Processing

Lesson Objectives - Identify the potential markets and products.
- List proper stocking procedures.
- List proper processing procedures.
- Describe proper sales and advertising techniques.

Problem Area - Evaluation

Lesson Objectives - List proper management practices.
- Calculate profit and loss.

Evaluation:

As a result of this unit the students will be able to meet the objectives of the unit.

UNIT EVALUATION

	VALUES
Daily Evaluation	20
Quiz	20
Unit Examination	40
Laboratory Activities	20
TOTAL POINTS	100

Course: Small Animal Production

Unit: Beekeeping/Honey Production

Unit Objectives:

1. Outline the management practices required to successfully operate a bee colony.

2. Set production and profit goals given a typical beekeeping situation in Iowa.

3. Outline the management practices required to successfully process and market honey.

Introduction/Situation:

Beekeeping/honey production is a topic within the small animal production unit. It is an exciting and challenging course of study that offers diversification to the traditional Iowa farm.

Unit: The Sequence

Problem Area - Bees: The Individual and the Colony

Lesson Title - Outline the kinds of adult bees

Lesson Objectives - 1) Identify the 3 types of honey bees
2) Identify and discuss length of development (metamorphis)

Lesson Title - Outline what a colony is

Lesson Objectives - 1) Define honey bee colony
2) Define colony terminology and structure

Problem Area - Identify Beekeeping Equipment

Lesson Title - Selection and assembly of equipment

Lesson Objectives - 1) Calculate the cost of equipment
2) Identify the equipment needed for proper bee care
3) Explain the proper procedures used in the assembly of beekeeping equipment

Lesson Title - Constructing beekeeping equipment

Lesson Objectives - 1) Explain methods and procedures needed to perform operation

Unit: The Sequence

Problem Area - Planning for the Spring Management of a Bee Colony

Lesson Title - Planning the location and arrangement of colonies

Lesson Objectives - 1) Explain straight rows vs. irregular rows
2) Identify the areas that are important to a colony

Lesson Title - Outline safety and handling methods of a colony

Lesson Objectives - 1) Explain safety methods and procedures of beekeeping
2) Explain proper beekeeper clothing and materials
3) List proper methods of how to handle bees

Lesson Title - Selecting a colony

Lesson Objectives - 1) Identify a brood pattern
2) Selection of a Queen Bee

Lesson Title - Identify space requirements for a colony

Lesson Objectives - 1) Outline seasonal needs for space

Unit: The Sequence

Problem Area - Outline a Summer Management Program

Lesson Title - Identify the plants needed for honey production

Lesson Objectives - 1) Explain nectar and pollen plants

Lesson Title - Identify swarming and swarm prevention

Lesson Objectives - 1) Explain swarming
2) Outline swarm prevention

Lesson Title - Removing the honey crop

Lesson Objectives - 1) Procedures for removing honey
2) Selecting the right honey
3) Procedures of removing bees

Problem Area - Outline a Honey Production Program

Lesson Title - Processing the honey

Lesson Objectives - 1) Outline safety and health standards
2) Removing moisture
3) Extracting honey

Lesson Title - Marketing the honey

Lesson Objectives - 1) Packaging and labeling honey for sale
2) Grading standards for honey
3) Markets and commodity pricing of honey

Problem Area - Outline Disease & Pest Management of Honey Bees

Lesson Title - Identify brood and bee diseases

Lesson Objectives - 1) List disease prevention and control measures

Lesson Title - Identify pests of honey bees

Lesson Objectives - 1) List pest control methods

Unit Evaluation:

A pretest will be given to the students to evaluate what their knowledge of the subject is before the unit will be taught. Students will be evaluated during the unit (formative evaluation) and following the completion of the unit (summative evaluation) as follows:

		Pts.	
A.	Daily Grades - (4 x 15 days)	= 60	14%
	Scale as corn unit		
B.	Quizzes will be given covering the classroom and field trip experiences once a week - (20 pts x 3 wks.)	= 60	14%
C.	Worksheets will be completed for each problem area - (10 x 20 pts.)	= 200	48%
D.	Unit examination (posttest) will be completed at the end of the unit -	100	24%
	TOTAL	420	100%

People, materials and resources which can help in teaching this unit.

People

1. Iowa Honey Bee Association
2. ISU Extension Service
3. Local Processor & Marketing Firm

Materials

1. Iowa State Fair Demonstration
2. Field trips to:
   a) Local apiary
   b) Marketing firm
   c) Processing firm

Resources

1. Beekeeping in the Midwest by Elbert R. Jaycock, University of Illinois Cooperative Extension Service
2. Write to your extension beekeeping specialist or state apiary inspector for materials.
3. The Speedy Bee. Route 1, Box G-27, Jesup, Georgia, 31545. A monthly newsletter.

COURSE Animal Science

UNIT Small Animal Pets

UNIT OBJECTIVES

THE STUDENT WILL BE ABLE TO:

1. Outline the management practices necessary for small animals and pets.

2. Use the proper selection criteria for each breed of small animal.

3. Identify the career opportunities in pet care and management.

4. Use the appropriate management techniques to ensure small animal health and well-being.

INTRODUCTION/SITUATION

Since most students in agriculture have or will have some species of pets in their household at some point in their lifetime, it is important that they be familiar with and knowledgeable about proper pet selection, nutrition, health, training, reproduction, grooming, and housing. Small animal care, grooming, boarding, and training is also an expanding area for possible career opportunities. This unit is intended to be introduced at the ninth grade level and to last approximately 6-8 teaching days or whatever is appropriate to the situation.

UNIT SEQUENCE

PROBLEM AREA Selection of Canine Species
Lesson Title Identifying Canine Breeds

Lesson Objectives
1) Identify, describe, and list the characteristics of and differences between breeds of dogs.
2) Select the most appropriate individual from the canine breed depending upon the intended use of the individual animal.

PROBLEM AREA Selection of Feline Species
Lesson Title Identifying Feline Breeds

Lesson Objectives
1) Identify, describe, and list the characteristics of and differences between breeds of cats.
2) Select the most appropriate individual from the canine breed depending upon the intended use of the individual animal.

PROBLEM AREA Selection of Avian Species

Lesson Title Identifying Avian Species

Lesson Objectives

1) Identify, describe, and list the characteristics of and differences between genera of small caged birds.

2) Select the most appropriate individual from among the avian genera depending upon the intended use of the individual bird.

PROBLEM AREA Selection of Other Small Animal Pets

Lesson Title Identifying Reptiles, Rodents, and Fishes

Lesson Objectives

1) Identify and describe the characteristics of and differences between genera of small reptiles, rodents, and fishes.

2) Select the most appropriate individual from among the many species depending upon the intended use of the individual reptile or rodent.

PROBLEM AREA Small Animal/Pet Nutrition

Lesson Title Describing Digestive Systems and Nutritional Needs

Lesson Objectives

1) Identify and describe the components of the digestive system.

2) Describe the nutritional requirements for different stages in the growth and development of small animals.

3) Select the proper feed for a particular animal.

4) Recognize the nutritional requirements of various small animals.

PROBLEM AREA Small Animal/Pet Health

Lesson Title Controlling Diseases of Small Animals

Lesson Objectives

1) Identify and list the causes of the more common diseases peculiar to small animals.

2) Perform disease prevention practices for small animals.

3) Perform treatment for minor injuries, diseases, and health maintenance practices.

Lesson Title Controlling Parasites of Small Animals

Lesson Objectives

1) Identify and describe internal parasites of small animals.

2) Identify and describe external parasites of small animals.

3) Treat small animals for infestations of parasites.

4) Identify and describe parasite prevention practices for small animals.

PROBLEM AREA Small Animal Pet Management

Lesson Title Grooming Small Animals

Lesson Objectives

1) Outline the proper procedures for an effective grooming program.

Lesson Title Reproduction in Small Animals/Pets

Lesson Objectives

1) Identify and describe the reproductive components of small animal pets.

2) Select appropriate management practices during gestation, parturition, and lactation of small animal pets.

Lesson Title Housing

Lesson Objectives

1) Identify and describe the housing requirements for different small animal pets.

2) Compare and contrast the advantages and disadvantages of different types of housing for small animal pets.

PROBLEM AREA Career Exploration

Lesson Title Identifying Careers in the Small Animal/ Pet Industry

Lesson Objectives

1) Identify a career in the small animal pet industry he/she is interested in exploring.

2) Outline the requirements necessary for an entry-level position in this career area.

3) Explain requirements and duties for a position.

UNIT EVALUATION

	VALUES
Daily evaluation on class participation	10
Unit test	25
Student presentation of career information	15
Worksheets	25
Activities/Groups	25
TOTAL POINTS----	100

Course - Advanced Animal Science

Unit Title - Animal Rights in Veal Production

Unit Objectives -

Identify what animal rights activists are concerned about.

Determine legality and practicality of modern agriculture to protect animal rights.

Situation -

It is becoming increasingly evident that veal producers must address the concerns of the animal rights activists and/or those people concerned with veal production abuses.

Problem Area - Current Veal Production Techniques and Practices

Lesson Objectives - Identify current practices regarding space requirements and lighting patterns in confinement operations.

Problem Area - Concerns of the Animal Rights Activists

Lesson Objectives - Determine group's objectives and objections to veal production practices.

Problem Area - Student Evaluation of Both Positions

Lesson Objectives - Identify positions of both groups.
- Formulate debate material and conduct the debate.

Problem Area - Summarizing Findings and/or Positions

Lesson Objectives - Discuss viewpoints of opposing factions.

Evaluation -

1. Students will be given a unit quiz at the end of the unit, covering materials and discussion on animal rights. 20 points

2. Students will debate the pros and cons of animal rights activists. 50 points

Course - Animal Science

Unit - Dairy Production

Unit Objectives:

1. Students will be able to properly select, feed, and house a dairy cow and dairy calf.
2. Students will outline diseases, insects, and parasites that are common to the dairy industry.
3. Students will outline management and marketing practices for dairy farms.

Introduction/Situation

This until will be taught to freshmen Vo-Ag students. This unit is to help the students develop an awareness of the basic skills needed in running a dairy farm. Hands on skills and economic decision-making skills for running a dairy farm will be practiced by the students.

Sequencing the Unit

Problem Area 1. Selecting Dairy Cows

Lesson 1. Identify types of dairy cows
- A. Identify the 5 major dairy breeds
- B. List desirable traits of each breed

Lesson 2. Comparative placing of dairy cows
- A. Place a class of four 3 year old Holsteins
- B. Give oral reasons for placing these cows

Lesson 3. Comparative placing of dairy heifers
- A. Place a class of yearling heifers
- B. Give oral reasons for placing these heifers

Problem Area 2. Breeding Dairy Cows

Lesson 1. Selecting cows from the herd
- A. Identify the cows with the most desirable traits
- B. Identify the cows that are most suited to the operation
- C. Identify the best time for breeding

Lesson 2. Selecting Dairy Bulls
- A. Identify bulls that show desirable traits
- B. Identify bulls that will correct herd weakness

Problem Area 3. Housing of Dairy Animals

Lesson 1. Identify types of dairy housing
- A. List different types of housing available
- B. List advantages and disadvantages of each type
- C. Prepare a housing system for a dairy operation

Problem Area 4. Feeding of Dairy Animals

Lesson 1. Identify types of dairy feedstuffs
- A. List different types of protein feedstuffs and identify each sample
- B. List different types of energy feedstuffs and identify each sample

Lesson 2. Feeding rations for maintenance and milk production
- A. Calculate ration for maintenance of a dairy cow
- B. Calculate ration for lactating dairy cows

Lesson 3. Feeding rations for the growing dairy heifers
- A. Calculate a ration for a dairy calf
- B. Calculate a ration for a bread yearling heifer

Problem Area 5. Maintaining the Dairy Cow

Lesson 1. Identify ways to maintain the stature of a dairy cow
- A. Trim hooves
- B. Clip the animal

Problem Area 6. Controlling Diseases of Dairy Cows

Lesson 1. Identify types of diseases
- A. List diseases of the mammary system
- B. List diseases of the respiratory tract
- C. List diseases of the reproductive tract

Lesson 2. Identify ways to control and prevent diseases
- A. Design a program to control diseases
- B. Outline a program to prevent diseases
- C. Identify ways to treat diseases

Problem Area 7. Controlling Insects

Lesson 1. Identify types of insect control
- A. List different types of insects
- B. List different types of insecticides
- C. Outline a plan to control insects

Problem Area 8. Analyze Milking Systems

Lesson 1. Identify types of milking systems
- A. List different types of milking systems
- B. List advantages and disadvantages of each system

Lesson 2. Identify parts of a milking system
A. Explain the use of each part of the system
B. List the vacuum requirements for each part

Problem Area 9. Marketing of Milk

Lesson 1. Identify ways to market milk
A. List uses of marketable milk
B. Identify systems of marketing milk
C. Outline costs and benefits of marketing milk

Unit Evaluation

Students will be evaluated the following way:

A. There will be six 10 point quizzes throughout the unit. . . . . 60 points

B. There will be 16 task sheets of 10 points each . . . . . 160 points

C. Five point daily evaluation of each student . . . . . 80 points

D. Students will be graded of their oral reasons and placing of the dairy cow and calf, 25 points each . . . . . 50 points

E. Student plans for a housing system will be evaluated . . . . . 100 points

F. Calculated feed rations for dairy cows and calves will be evaluated . . . . . 100 points

G. There will be an examination at the end of the unit . . . . . 100 points

H. Insect identification quiz . . . . . 25 points

I. Evaluation of vacuum recommendation sheet . . . . . 25 points

Total Possible . . . . . 700 points

Course - Animal Production

Unit - Beef Production

Unit Objectives

Given a situation including initial weight, feeds available, and production goals; formulate a feeding program to finish a steer according to goals.

Given the unit of instruction, outline a realistic disease prevention program for beef according to accepted procedures.

Given a record book and the students own steer or a set of printed data, the student will record feed, materials and labor to the satisfaction of the instructor.

Introduction/Situation

This unit will be taught to ninth and tenth grade students studying Animal Production in early spring so that the student can carry an FFA beef project concurrently. Beef is the major enterprise in thirty percent of local farms and twenty-five percent of students studying vocational agriculture indicate intention to pursue a career in some phase of beef production. This unit of instruction will help to prepare students for careers as herdsmen, stable man, farm manager, tenant farmer, farm owner/operator, livestock farmhand, animal breeder, animal caretaker, farmhand or farm foreman. Seven students carried beef projects for SOE last year and each one showed his/her animal at Dallastown fair.

Sequencing Problem Areas and Lessons

Problem Area - Why Should I Know Anything About Beef?

Lesson Title - Careers in Beef Production
Lesson Objectives - List seven career opportunities available in beef production
- Prepare a bulletin display indicating importance of beef production in York County (work as a class)

Problem Area - Selecting Breeding Stock

Lesson Title - Breed Identification
Lesson Objectives - List seven major beef breeds
- Identify at least one outstanding characteristic of each breed

Lesson Title - Selecting Breeding Animals
Lesson Objectives - Describe importance of having sound breeding stock in a beef program
- List three important criteria for selecing herd replacement
- Describe favorable feminine traits in a beef animal (cow)
- List desirable masculine traits in a beef bull

Problem Area - Breeding and Calving

Lesson Title - Breeding Beef Cattle
Lesson Objectives - List three advantages of a herd bull
- List three advantages of A.I.

Lesson Title - Calving Time
Lesson Objectives - Describe an accepted practice for providing shelter during calving
- List five important considerations for choosing a veterinarian
- Indicate the importance of timing in breeding and calving

Problem Area - Feeding Beef Cattle

Lesson Title - Ruminant Digestion
Lesson Objectives - Draw diagram of ruminant stomach and name parts
- Indicate functions of each part
- Prepare a list of feed stuffs which can be utilized by a ruminant but not a monogastric

Lesson Title - Feeding Breeding Stock
Lesson Objectives - List objectives of stock feeding programs
- Explain critical times/special situations for feeding beef cows

Lesson Title - Finishing Cattle for Slaughter
Lesson Objectives - List objectives of finishing programs
- Describe correlations between feeding program and carcass quality
- Contrast stock feeding program with finishing program

Problem Area - Selecting Proper Feedstuffs

Lesson Title - Identification of Beef Feeds
Lesson Objectives - Given ten sample feedstuffs, differentiate between them
- Construct a chart listing alfalfa, timothy, pasture, corn, and soybean meal to indicate the nutritive value of each
- Describe three approved practices for pasture management

Lesson Title - Ration Formulation
Lesson Objectives - List necessary components of a balanced ration
- Demonstrate correct use of Pearson Square
- Plan a total feeding program to finish a steer, including ration formulation

Problem Area - Maintaining a Healthy Herd

Lesson Title - Disease Identification
Lesson Objectives - List common health problems in calves and indicate accepted remedies
- Identify five common herd diseases and methods of control
- Formulate a list of prevalent beef diseases present in York County herds

Lesson Title - Disease Control
Lesson Objectives - Indicate five herd health management principles
- Describe relationship between cleanliness and disease prevention
- Indicate two situations which demand the attention of a professional (veterinarian)

Lesson Title - Ventilation and Health
Lesson Objectives - Identify three methods of heat gain
- Identify three methods of heat loss
- Describe the importance of heat control to a production situation

Problem Area - Producing Quality Beef

Lesson Title - Identify What the Consumer Expects in Beef
Lesson Objectives - List seven characteristics consumers look for when selecting beef
- Design a public relations strategy to promote beef consumption

Problem Area - Marketing Beef

Lesson Title - Design a Marketing Plan for the Sale of Beef
Lesson Objectives - Explain marketing cycles
- Identify the beef "grades"
- Explain the pricing of beef

Unit Evaluation

Students will be evaluated during the unit of instruction (formative evaluation) and following the completion of the unit (summative evaluation).

A. Students will be evaluated at the completion of each project as follows:

1. Bulletin board	20 points
2. Ruminant diagram	20 points
3. Feeds chart	20 points
4. Feeding program	60 points
5. York County beef disease list	20 points
6. Record book	60 points
	200 points

B. Five quizzes will be given during the course of the unit, covering classroom and practical procedures — 50 points

C. A multiple choice examination will be given at the conclusion of the unit — 150 points

TOTAL POSSIBLE — 400 points